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Parts I and II
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AFSC 2P0X1

PRECISION MEASUREMENT EQUIPMENT LABORATORY

CAREER FIELD EDUCATION

AND TRAINING PLAN

CAREER FIELD EDUCATION AND TRAINING PLAN
PRECISION MEASUREMENT EQUIPMENT LABORATORY SPECIALTY
AFSC 2P0X1

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PRECISION MEASUREMENT EQUIPMENT LABORATORY SPECIALTY
AFSC 2P0X1
CAREER FIELD EDUCATION AND TRAINING PLAN

PART I

PREFACE

1. This Career Field Education and Training Plan (CFETP) for AFSC 2P0X1 Precision Measurement Equipment Laboratory (PMEL) Specialty, is a comprehensive education and training document that identifies life-cycle education/training requirements, training support resources, and minimum core task requirements for this specialty. The CFETP will provide personnel a clear career path to success and instills rigor in all aspects of career field training. Note: Civilians occupying associated positions will use Part II to support duty position qualification training.

2. The CFETP consists of two parts; both parts of the plan are used by supervisors to plan, manage, and control training within the career field.

2.1. Part I provides information necessary for overall management of the specialty. **Section A** explains how everyone will use the plan; **Section B** identifies career field progression information, duties and responsibilities, training strategies, and career field path; **Section C** associates each level with specialty qualifications (knowledge, education, training, and other); **Section D** indicates resource constraints. Some examples are funds, manpower, equipment, facilities; **Section E** identifies transition training guide requirements for SSgt through MSgt.

2.2. Part II includes the following: **Section A** identifies the Specialty Training Standard (STS) and includes duties, tasks, technical references to support training, Air Education and Training Command (AETC) conducted training, wartime course/core task and correspondence course requirements; **Section B** contains the course objective list/training standards supervisors will use to determine if airmen satisfied training requirements; **Section C** identifies available support materials. An example is a Qualification training packages (QTPs) which may be developed to support proficiency training. These packages are indexed in AFIND 8, Numerical Index of Specialized Educational Training Publications; **Section D** identifies a training course index supervisors can use to determine resources available to support training. Included here are both mandatory and optional courses; **Section E** identifies MAJCOM unique training requirements supervisors can use to determine additional training required for the associated qualification needs.

3. Using guidance provided in the CFETP will ensure individuals in this specialty receive effective and efficient training at the appropriate points in their career. This plan will enable us to train today's work force for tomorrow's jobs. At unit level, supervisors and trainers will use Part II to identify, plan, and conduct training commensurate with the overall goals of this plan. This plan will enable PMEL personnel to keep pace with the future technological advances within the Air Force Specialty (AFS).

ABBREVIATIONS/TERMS EXPLAINED

Advanced Training (AT). Formal course which provides individuals who are qualified in one or more positions of their Air Force Specialty (AFS) with additional skills/knowledge to enhance their expertise in the career field. Training is for selected career airmen at the advanced level of the AFS.

Air Force Job Qualification Standard (AFJQS). A comprehensive task list which describes a particular job type or duty position. It is used by supervisors to document task qualifications. The tasks on AFJQS are common to all persons serving in the described duty position.

Career Field Education and Training Plan (CFETP). A CFETP is a comprehensive, multipurpose document encapsulating the entire spectrum of education and training for a career field. It outlines a logical growth plan that includes training resources and is designed to make career field training identifiable, to eliminate duplication, and to ensure this training is budget defensible.

Career Training Guide (CTG). A document that uses Task Modules (TMs) in lieu of tasks to define performance and training requirements for a career field.

Continuation Training. Additional training exceeding requirements with emphasis on present or future duty assignments.

Core Task. A task Air Force career field managers (AFCMs) identify as a minimum qualification requirement within an Air Force specialty or duty position. These tasks exemplify the essence of the career field - the foundation. Only a percentage of critical tasks for each system are listed as mandatory core tasks. This gives units the needed flexibility to manage their work load training.

Course Objective List (COL). A publication, derived from initial/advanced skills course training standard, identifying the tasks and knowledge requirements, and respective standards provided to achieve a 3-/7-skill level in this career field. Supervisors use the COL to assist in conducting graduate evaluations in accordance with AFI 36-2201, Developing, Managing and Conducting Military Training Programs.

Specialty Training (ST). A mix of formal training (technical school) and informal training (on-the-job) to qualify and upgrade airmen in each skill level of a specialty.

Exportable Training. Additional training via computer assisted, paper text, interactive video, or other necessary means to supplement training.

Field Technical Training (Type 4). Special or regular on-site training conducted by a field training detachment (FTD) or by a mobile training team.

Instructional System Development (ISD). A deliberate and orderly, but flexible process for planning, developing, implementing, and managing instructional systems. It ensures personnel are taught in a cost efficient way the knowledge, skills, and attitudes essential for successful job performance.

Initial Skills Training. A formal resident course which results in award of the entry level.

Occupational Survey Report (OSR). A detailed report showing the results of an occupational survey of tasks performed within a particular AFS.

On-the-Job Training (OJT). Hands-on, over-the-shoulder training conducted to certify personnel in both upgrade (skill level award) and job qualification (duty position certification) training.

Qualification Training (QT). Actual hands-on task performance training designed to qualify an individual in a specific duty position. This portion of the dual channel on-the-job training program occurs both during and after the upgrade training process. It is designed to provide the performance skills required to do the job.

Qualification Training Package (QTP). An instructional package designed for use at the unit to qualify, or aid qualification, in a duty position or program, or on a piece of equipment. It may be printed, computer-based, or in other audiovisual media.

Representative Sites. Typical organizational units having similar missions, weapon systems or equipment, or a set of jobs, used as a basis for estimating average training capacities and costs within the Training Impact Decision System (TIDES).

Resource Constraints. Resource deficiencies, such as money, facilities, time, manpower, and equipment that preclude desired training from being delivered.

Skills Training. A formal course which results in the award of a skill level.

Specialty Training. A mix of formal training (technical school) and informal training (on-the-job) to qualify and upgrade airmen in the award of a skill level.

Specialty Training Package and COMSEC Qualification Training Package. A composite of lesson plans, test material, instructions, policy, doctrine, and procedures necessary to conduct training. These packages are prepared by AETC, approved by National Security Agency (NSA), and administered by qualified communications security (COMSEC) maintenance personnel.

Specialty Training Standard (STS). An Air Force publication that describes skills and knowledges that airman in a particular Air Force specialty needs on the job. It further serves as a contract between the Air Education and Training Command and the user to show the overall training requirements for an Air Force specialty code that the formal schools teach.

Standard. An exact value, a physical entity, or an abstract concept, established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. A fixed quantity or quality.

Task Module (TM). A group of tasks performed within an Air Force specialty that are performed together and that require common knowledge, skills, and abilities. TMs are identified by an identification code and a statement.

Total Force. All collective Air Force components (active, reserve, guard, and civilian elements) of the United States Air Force.

Training Capacity. The capability of a training setting to provide training on specified requirements, based on the availability of resources.

Training Planning Team (TPT). Comprised of the same personnel as a U&TW, however TPTs are more intimately involved in training development and the range of issues are greater than is normal in the U&TW forum.

Training Requirements Analysis. A detailed analysis of tasks for a particular AFS to be included in the training decision process.

Training Setting. The type of forum in which training is provided (formal resident school, on-the-job, field training, mobile training team, self-study etc.).

Upgrade Training (UGT). Mandatory training which leads to attainment of higher level of proficiency.

Utilization and Training Pattern. A depiction of the training provided to and the jobs performed by personnel throughout their tenure within a career field or Air Force specialty. There are two types of patterns: 1) Current pattern, which is based on the training provided to incumbents and the jobs to which they have been and are assigned; and 2) Alternate pattern, which considers proposed changes in manpower, personnel, and training policies.

Utilization and Training Workshop (U&TW). A forum of the Air Force career field manager, MAJCOM Air Force Specialty Code (AFSC) functional managers, Subject Matter Experts (SMEs), and ATC training personnel that determines career ladder training requirements.

SECTION A - GENERAL INFORMATION

1. Purpose. This CFETP provides information necessary for the Air Force Career Field Manager (AFCFM), MAJCOM functional managers (MFMs), commanders, training managers, supervisors and trainers to plan, develop, manage, and conduct an effective career field training program. This plan outlines the training that individuals in AFSC 2P0X1 should receive in order to develop and progress throughout their career. This plan identifies initial skills, upgrade, qualification, advanced, and proficiency training. Initial skills training is the AFS specific training an individual receives upon entry into the Air Force or upon retraining into this specialty for award of the 3-skill level. Normally, this training is conducted by AETC at one of the technical training centers. Upgrade training identifies the mandatory courses, task qualification requirements, and correspondence course completion requirements for award of the 3-, 5-, 7-, 9-skill levels. Qualification training is actual hands-on task performance training designed to qualify an airman in a specific duty position. This training program occurs both during and after the upgrade training process. It is designed to provide the performance skills/knowledge required to do the job. Advanced training is formal specialty training used for selected airmen. Proficiency training is additional training, either in-residence or exportable advanced training courses, or on-the-job training, provided to personnel to increase their skills and knowledge beyond the minimum required for upgrade. The CFETP has several purposes, some are:

1.1. Serves as a management tool to plan, manage, conduct, and evaluate a career field training program. Also, it is used to help supervisors identify training at the appropriate point in an individual's career.

1.2. Identifies task and knowledge training requirements for each skill level in the specialty and recommends education/training throughout each phase of an individuals career.

1.3. Lists training courses available in the specialty, identifies sources of training, and the training delivery method.

1.4. Identifies major resource constraints which impact full implementation of the desired career field training process.

2. Uses. The plan will be used by the AFCFM, MFMs and supervisors at all levels to ensure comprehensive and cohesive training programs are available for each individual in the specialty.

2.1. AETC training personnel will develop/revise formal resident, non-resident, field and exportable training based on requirements established by the users and documented in Part II of the CFETP. They will also work with the AFCFM to develop acquisition strategies for obtaining resources needed to provide the identified training.

2.2. MFMs will ensure their training programs complement the CFETP mandatory initial, upgrade, and proficiency requirements. Identified requirements can be satisfied by OJT, resident training, contract training, or exportable courses. MAJCOM developed training to support this AFSC must be identified for inclusion into this plan.

2.3. Each individual will complete the mandatory training requirements specified in this plan. The lists of courses in Part II will be used as a reference to support training.

3. Coordination and Approval. The AFCFM is the approval authority. MAJCOM representatives and AETC training personnel will identify and coordinate on the career field training requirements. The AETC training manager for AFSC 2P0X1 will initiate an annual review of this document by AETC and MFMs to ensure currency and accuracy. Using the list of courses in Part II, they will eliminate duplicate training. Applicable inputs/changes to this CFETP will be routed to 336 TRS/TTMZ, 709 Meadows Dr., Ste 122, Keesler AFB MS 39534-2480

SECTION B - CAREER PROGRESSION AND INFORMATION

1. Specialty Description.

1.1. Specialty Summary.

1.2. Duties and Responsibilities.

1.2.1. Precision Measurement Equipment Laboratory Apprentice and Journeyman: Analyzes routine maintenance problems in Test Measurement and Diagnostic Equipment (TMDE), including laboratory standards. Uses theories of operation, block diagrams, schematics, pictorial drawings, logic trees, and software diagnostics. Traces circuits and isolates malfunctions in TMDE. Obtains assistance from craftsmen in diagnosing and isolating equipment malfunctions. Inspects TMDE for preventive maintenance, cleanliness, and safety requirements. Removes components and installs replacement parts in equipment. Performs equipment maintenance using hand tools, special tools, high reliability soldering techniques, and technical data. Obtains assistance from craftsmen in overhauling and modifying intricate assemblies and subassemblies. Aligns and adjusts TMDE to technical data specifications. Studies maintenance policy and procedures in manufacture's handbooks, technical orders, and organizational maintenance directives for TMDE, including laboratory standards. Ensures equipment operational accuracy by performing laboratory and on-site calibrations. Uses laboratory working standards, reference standards, Transportable Field Calibration Unit (TFCU), Portable Automatic Test Equipment Calibrator (PATEC), engine test stand calibrator, Field Assistance Support Team for Calibration (FASTCAL), and Electrical Standards Set (ESS). Certifies equipment accuracy to technical data specifications. Prepares and uses calibration correction charts. Obtains assistance from craftsmen in calibrating complex equipment. Assists in preparing calibration responsibility determinations, material deficiency reports, technical order improvement reports, requests for special training, training quality reports, and modification proposals. Records pertinent data on equipment Maintenance Data Collection (MDC) forms and/or enters data into the PMEL Automated Management System (PAMS) and other automated test products. Helps to evaluate and develop calibration and maintenance procedures, technical data verification, and operational test and evaluation of new equipment. Manages the Technical Order Distribution Office (TODO) account. Identifies deficient TMDE to the Air Force Metrology and Calibration (AFMETCAL) Product Improvement Working Group (PIWG). Assists in the management of databases for the automated information management system. Handles, labels, and disposes of hazardous materials according to Environmental Standards.

1.2.2. Precision Measurement Equipment Laboratory Craftsman: Analyzes complex and unusual maintenance problems in TMDE, including laboratory standards. Traces circuits and isolates malfunctions in complex TMDE. Helps apprentices and journeymen analyze and isolate equipment malfunctions. Inspects TMDE for preventive maintenance, cleanliness, and

safety requirements. Overhauls and modifies assemblies, subassemblies, and all laboratory standards. Interprets maintenance policy and procedures in manufacturers' handbooks, technical orders, and organizational maintenance directives for TMDE, including laboratory standards. Verifies United States Air Force Base Reference Standards accuracy using intercomparison techniques. Prepares, verifies, and analyzes MDC documentation and automatic test products. Accomplishes technical data verification, operational tests, and new equipment evaluation. Coordinates lateral support, command certification, and contract services. Resolves equipment logistics problems with Air Force Materiel Command (AFMC) item managers. Develops and evaluates budget requirements and logistic support agreements. Inventories equipment, tools, parts, and supplies. Evaluates procedures for storing, inventorying, and inspecting property. Resolves production problems. Manages the database for the automated management system. Analyzes and interprets trends. Recommends corrective actions. Provides technical and training assistance to TMDE users. Coordinates TMDE mission support requirements in a geographical area by evaluating workload inputs, training requirements, laboratory environmental conditions, and availability of skills and equipment. Identifies scheduled mission-essential TMDE and its impact on workload. Develops workload plans, budgets, support agreements, special reports, and requests isotope permits. Ensures compliance with published safety guidelines. Provides training and task certification for skill level advancement.

1.2.3. Precision Measurement Equipment Laboratory Superintendent: Determines logistic support requirements for inspecting, modifying, repairing, and calibrating TMDE and laboratory standards. Sets objectives based on available resources, alternative support sources, and supported workcenters' wartime requirements. Determines special qualifications needed by assigned personnel. Determines training requirements and personnel, equipment, and supplies availability. Determines calibration area environmental adequacy, and funds consumption rates and availability. Reviews management data to identify adverse trends in meeting plan objectives. Implements, conducts and directs TMDE logistic support plans. Delegates authority to craftsmen and journeymen to implement and conduct plans in specific areas. Submits budget inputs, quality program results, radioisotope permits and licenses, and war support plan inputs to appropriate activity. Evaluates support adequacy by reviewing reports, inspection results, and documentation error rates. Visits workcenters to discuss support adequacy. Presents briefings on geographical support. Resolves TMDE logistics support problems. Takes corrective action on negative trends revealed by quality and production programs. Seeks assistance from specialists to resolve TMDE logistics support deficiencies. Manages the Total Quality Program. Ensures hazardous materials and waste are handled, stored, and disposed of according to environmental standards.

2. Career Skill Progression. Adequate training and timely progression from the apprentice to the superintendent skill level play an extremely important role in the Air Force's ability to accomplish its mission. It is essential that everyone involved in training do their part to plan, develop, manage and conduct an effective training program. The guidance provided in this part of the CFETP will ensure individuals receive viable training at appropriate points in their careers.

The following narrative and the AFSC 2P0X1 Career Development Flow Charts identify the career skill progression.

2.1. Apprentice (3-Level): Upon completion of initial skills training, trainees will work with trainers to enhance their knowledge and skills. They will utilize the Career Development Course (CDC) and Task Qualification Training to progress in their career field.

2.2. Journeyman (5-Level): Once upgraded to the 5-level, journeymen enter into continuation training to broaden their experience base. Five-levels may be assigned job positions such as quality assurance, section chief, and various staff positions. Five-levels will complete supplemental courses, exportable courses, and MAJCOM specific training as required. Individuals will be eligible to attend the Airman Leadership School (ALS) as a SrA with 48 months time in service or when selected for promotion to SSgt. After ALS, they may be considered for appointment as unit trainers. Individuals will use their CDCs and other study references to prepare for testing under the Weighted Airman Promotion System (WAPS). They should also consider continuing their education by working towards a Community College of the Air Force (CCAF) degree.

2.3. Craftsman (7-Level): Craftsmen can expect to fill various supervisory and management positions such as shift leader, element chief, and task certifier. They may also be assigned to work in staff positions. Seven-levels should take courses to obtain added knowledge on management of resources and personnel. Continued academic education through CCAF and higher degree programs is encouraged. When promoted to TSgt, individuals will attend the Noncommissioned Officer Academy.

2.4. Superintendent (9-Level): A 9-level can be expected to fill positions such as flight chief, production supervisor and various staff NCOIC jobs. Additional training in the areas of budget, manpower, resources, and personnel management should be pursued through continuing education. Individuals promoted to SMSgt will attend the Senior Noncommissioned Officer Academy. Additional higher education and completion of courses outside their career AFSC are also recommended.

3. Training Decisions. The CFETP was developed using a building block approach (simple to complex) to encompass the entire spectrum of training requirements for the Precision Measurement Equipment Laboratory Career Field. The spectrum includes a strategy for when, where, and how to meet these training requirements. The strategy must ensure we develop affordable training, eliminate duplication, and prevent a fragmented approach to training. The following training decisions were made at the career field Utilization and Training Workshop (U&TW) held at Lowry AFB, 13 - 17 Dec 1993:

3.1. Initial Skills Training. A decision was made to revise the resident course. Major changes included: the addition of instruction in physical/dimensional equipment; addition of parts research (FEDLOG); calibration of AC/DC laboratory standards was deleted to better reflect the level of training required for the 3 skill level; addition of extensive shop operations training to include full training on high use TMDE.

3.2. Five-Level Upgrade Training Requirements. The 5-level CDC was revised to increase the basic knowledge in Security, Hazardous Materials and Handling, DLA/DLR, Mathematical Computations and Vibration; to provide additional information in the use of Null Detectors, Standard Cell Intercomparison, Thermistor Mounts, Power Sensors, Power Meters, Attenuator Calibrator, Detectors, Oxygen TMDE, and Spectrum Analysis; and to provide assistance in the troubleshooting and repair of Time Domain Reflectometers, Oscilloscopes and Digital Multimeters. The 5-Level CDC was also revised to remove the usage of Analog Electronic (Active) Multimeters, Semiconductor Testers, Time Domain Reflectometers, Wide-Band Amplifiers, RF Sampling Voltmeter, and Power Meter Calibrator. The substitution of TMDE Standards was removed and the use of Technical Information to maintain TMDE Publications was changed from Principles to Procedures. The Specialty Training Standard (STS) was revised to provide additional training and to identify Air Force directed Core Tasks for upgrade to the 5-Level.

3.3. Seven-Level Upgrade Training Requirements. Requirements were identified for an in-residence 7-level course that provides indepth training on advanced use of TMDE and advanced troubleshooting techniques to identify and repair very difficult TMDE malfunctions experienced in the field. Additionally, the 7-level CDC was updated to provide indepth knowledge on TMDE currently in the field, including Type IV PMEL specific TMDE. Also, the STS 7-level core tasks were identified.

3.4. Proficiency Training. Any additional knowledge and skill requirements not identified as initial skills or upgrade training were assigned to the Continuation Training Program. The purpose of continuation training is to provide additional training which exceeds minimum training requirements. The training program will identify both mandatory and optional training requirements. Emphasis is on present and future duty positions. MAJCOMS will develop a continuation training program that ensures individuals receive the necessary training at the appropriate points in their careers. The training program will identity both mandatory and optional training requirements.

4. Community College of the Air Force. Enrollment in CCAF occurs upon completion of basic military training. CCAF provides the opportunity to obtain an Associate in Applied Science Degree. In addition to its associate degree program, CCAF offers the following:

4.1. Aerospace Management Certificate. The College awards the Aerospace Management Certificate to airmen who have completed job-related advanced resident technical training and professional military education and who possess the 7-skill level.

4.2. Occupational Instructor Certification. Upon completion of instructor qualification training, consisting of an instructor methods course and supervised practice teaching, CCAF instructors who possess an associate degree or higher may be nominated by their school commander for certification as an Occupational Instructor.

4.3. Trade Skill Certification. When a CCAF student separates or retires, a trade skill certification is awarded for the primary occupational specialty. The College uses a competency based assessment process for trade skill certification at one of four proficiency levels: Apprentice, Journeyman, Craftsman/Supervisor, or Master Craftsman/Manager. All are transcribed on the CCAF transcript.

4.4. Instructor of Technology and Military Science (2IBB). This program applies to CCAF students with a "T" prefix to their AFSC which identifies them as instructors.

4.5. The Electronic Systems Technology (4VHP). This program applies to AFSC 2P0X1.

4.6. Degree Requirements. All airmen are automatically entered into the CCAF program. Prior to completing an associate degree, the 5-level must be awarded and the following requirements must be met:

	Semester hours
Technical Education	24
Leadership, Management, and Military Studies	6
Physical Education	4
General Education	15
Program Elective	15
Technical Education; Leadership, Management, and Military Studies; or General Education	
Total	64

4.6.1. Technical Education (24 Semester Hours): Completion of the 2P031 training course satisfies 24 semester hours of the technical education requirement. A minimum of 12 semester hours of Technical Core subjects/courses must be applied and the remaining semester hours applied from Technical Core/Technical Elective courses.

4.6.2. Leadership, Management, And Military Studies (6 Semester Hours): Professional military education and/or civilian management courses.

4.6.3. Physical Education (4 Semester Hours): This requirement is satisfied by completion of Basic Military Training.

4.6.4. General Education (15 Semester Hours): Applicable courses must meet the criteria for application of courses to the General Education Requirements (GER) and be in agreement with the definitions of applicable General Education subjects/courses as provided in the CCAF General Catalog.

4.6.5. Program Elective (15 Semester Hours): Satisfied with applicable Technical Education; Leadership, Management, and Military Studies; or General Education subjects/courses, including natural science courses meeting GER application criteria. Six semester hours of CCAF degree applicable technical credit otherwise not applicable to this program may be applied. See the CCAF General Catalog for details regarding the Associates of Applied Science in Electronic Systems Technology (4VHP).

4.7. Additional off-duty education is a personal choice that is encouraged for all. Individuals desiring to become an Air Education and Training Command Instructor should be actively pursuing an associate degree. A degreed faculty is necessary to maintain accreditation through the Southern Association of Colleges and Schools.

5. Career Field Path. The career path is shown on pages 14 and 15.

5.1. Manpower Table. Authorizations as of 15 Nov 95.

	CMSgt	SMSgt	MSgt	TSgt	SSgt	SrA	A1C
ACC	4	4	28	47	95	127	103
A.F. ACAD				1	2		
AETC		2	13	25	34	45	26
USAFE	1	3	15	23	65	72	61
AIA				2	1	1	
AMC	3	2	8	14	35	44	39
NATO		1	2	2	2		
AFMC	2	5	15	16	16	32	22
OSI				1			
PACAF	3	4	16	35	60	103	63
SPC	1		4	4	5	7	1
TOTAL	14	21	101	170	315	431	315

5.2. Enlisted Career Path.

EDUCATION AND TRAINING REQUIREMENTS	**GRADE REQUIREMENTS**			
	RANK	AVERAGE SEW-ON	EARLIEST SEW-ON	HIGH YEAR OF TENURE (HYT)
BASIC MILITARY TRAINING SCHOOL				
APPRENTICE TECHNICAL SCHOOL (3-SKILL LEVEL)	Amn A1C	6 months 16 months		
UPGRADE TO JOURNEYMAN (5-SKILL LEVEL) *- Complete 6 months duty position/apprentice experience **before** beginning journeyman training.* *- Minimum 12 months on-the-job training.* *- Complete appropriate CDC if/when available.* *- Sew-on SrA for award of the 5-skill level.*	SrA	3 years	28 months	10 Years
AIRMAN LEADERSHIP SCHOOL (ALS) *- Must be a SrA with 48 months time in service or be a SSgt Selectee.* *- Resident graduation is a prerequisite for SSgt sew-on (Active Duty Only).*	**TRAINER** *- Most qualified regardless of skill level/AFSC, selected and recommended by the supervisor, and be certified to train others.* *- Qualified to perform task.* *- Must attend formal OJT Trainer Training and appointed by Commander.*			
UPGRADE TO CRAFTSMAN (7-SKILL LEVEL) *- Minimum rank of SSgt.* *- 18 months OJT.* *- Complete appropriate CDC if/when available.* *- Advanced Technical School.*	SSgt	7.5 years	3 years	20 Years
	CERTIFIER *- Minimum of a SSgt, 5-level in the same AFSC, if possible but not required.* *- Attend formal OJT Certifier Course and appointed by Commander.* *- Be a person other than the trainer.*			
NONCOMMISSIONED OFFICER ACADEMY (NCOA) *- Must be a TSgt or TSgt Selectee.* *- Resident graduation is a prerequisite for MSgt sew-on (Active Duty Only).*	TSgt	12.5 years	5 years	20 Years
	MSgt	16 years	8 years	24 Years
USAF SENIOR NCO ACADEMY (SNCOA) *- Must be a SMSgt or SMSgt Selectee.* *- Resident graduation is a prerequisite for CMSgt sew-on (Active Duty Only).*	SMSgt	19.2 years	11 years	26 Years
UPGRADE TO SUPERINTENDENT (9-SKILL LEVEL) *- Minimum rank of SMSgt.* *- Must be a resident graduate of SNCOA (Active Duty Only).*				
	CMSgt	21.5 years	14 years	30 Years

SECTION C - SKILL LEVEL TRAINING REQUIREMENTS

1. Purpose. The skill levels in the Precision Measurement Equipment Laboratory (2P0X1) career field are defined in terms of tasks and knowledge proficiency requirements for each skill level. They are stated in broad, general terms and establish the standards of performance. The specific task and knowledge training requirements are identified in the STS in Part II, Section A, of the CFETP. Unit work centers must develop a structured training program to ensure the following requirements are met.

2. Specialty Qualification Requirements.

2.1. Apprentice Level Training Requirements.

2.1.1. Specialty Qualification.

2.1.1.1. Knowledge. To perform duties at the 3-skill level, an individual, working under close supervision until task certified, must be able to inspect, troubleshoot, repair, modify, overhaul, align, calibrate, and certify TMDE and laboratory working standards. A 3-level must be able to use technical data, common hand tools, and special test equipment.

2.1.1.2. Education. Completion of high school or general education development equivalency is mandatory for entry into this specialty. Also, courses in electronics, physics, trigonometry, and algebra, and technical or vocational training in electronics or instrumentation is desirable.

2.1.1.3. Training. For award of AFSC 2P031, completion of a basic precision measurement equipment laboratory course is mandatory.

2.1.1.4. Experience. None.

2.1.1.5. Other. For entry into this specialty, normal color vision as defined in AFMAN 48-123 (formerly AFR 160-43) is mandatory.

2.1.2. Training Sources/Resources. The initial skills course will provide the required knowledge and qualifications. Initial skills training encompasses electronic principles, equipment theory and operation, system components, component removal and installation, introduction to metrology concepts, use of technical publications, maintenance documentation, and support equipment familiarization and use.

2.1.3.Implementation. Upon graduation from Basic Military Training, airmen are assigned to a training center for completion of course E3AQR30020A-014, Consolidated Electronics

Training Program, and course E3AZR2P031-002, Precision Measurement Equipment Laboratory Apprentice. Completion of both courses will result in award of the 3-level.

2.2. Journeyman Level Training Requirements.

2.2.1. Specialty Qualification.

2.2.1.1. Knowledge. In addition to the 3-level qualifications, an individual must possess knowledge of electrical, electronics, electromechanical, mechanical, physics, optics, and thermal principles; mathematics, and binary systems; operating principles of TMDE and laboratory working standards; analysis of block, schematic, wiring, and logic diagrams, and technical data; troubleshooting techniques; calibration traceability, metrology techniques, and laboratory practices; microprocessors; computer operational principles, language, and software; and aerospace systems principles.

2.2.1.2. Education. Same as required for entry into AFSC 2P031.

2.2.1.3. Training. Same as required for entry into AFSC 2P031.

2.2.1.4. Experience. Qualification in and possession of AFSC 2P031. Also, experience in functions such as maintaining, modifying, aligning, calibrating, or certifying TMDE and laboratory standards, or preparing inputs to TMDE logistics support systems.

2.2.1.5. Other. Same as required for entry into AFSC 2P031.

2.2.2. Training Sources/Resources. The 5-level CDC provides the career knowledge training required. Qualification training and OJT will provide training and qualification on core tasks identified in the STS or AFJQS. The CDC is written to build from the trainee's knowledge base and provides more in-depth knowledge supporting OJT requirements.

2.2.3. Implementation. Training to the 5-level is performed by the units, utilizing the STS or AFJQS, the CDC, and OJT. Upgrade to the 5-level requires completion of the 2P051 Precision Measurement Equipment Laboratory Journeyman CDC, 3 months job familiarization, 12 months OJT, completion of all core tasks, and promotion to E-4.

2.3. Craftsman Level Training Requirements.

2.3.1. Specialty Qualification.

2.3.1.1. Knowledge. In addition to the 5-level qualifications, an individual must possess knowledge of advanced electrical, electronics, electromechanical, mechanical, physics, radiac, optics and thermal principles; operating principles of complex and intricate TMDE and

laboratory standards; interpretation of block, schematic, wiring, and logic diagrams, and technical data; advanced troubleshooting techniques; planning, and quality assurance.

2.3.1.2. Education. Same as required for entry into AFSC 2P031.

2.3.1.3. Training. For award of AFSC 2P071, completion of the in-resident 7-level course is mandatory.

2.3.1.4. Experience. Qualification in and possession of AFSC 2P051. Also, experience in laboratory supervision, planning, maintaining, modifying, and certifying complex and intricate TMDE and laboratory standards, and preparing inputs to TMDE logistics support systems.

2.3.1.5. Other. Same as required for entry into AFSC 2P031.

2.3.2. Training Sources/Resources. Seven-level upgrade training will be conducted by certified trainers using AF core tasks, unit/MAJCOM specific courses, and a formal in-resident 7-level course. The in-resident 7-level course is written to provide advanced training that will develop a master troubleshooter or true expert at solving the most difficult malfunctions experienced in the field. The course will also cover advanced repair techniques and preventive maintenance programs.

2.3.3. Implementation. Upgrade to the 7-level will require completion of all AF core tasks, 7-level CDC's, 18 months OJT as a SSgt selectee/SSgt, and completion of the in-resident 7-level course. The AF core tasks, CDC's, and 18 months of OJT as a SSgt selectee/SSgt must be completed before attending the in-resident 7-level course.

2.4. Superintendent Level Training Requirements.

2.4.1. Specialty Qualification.

2.4.1.1. Knowledge. In addition to 7-level qualifications, an individual must possess knowledge of concepts and principles in war support planning and procedures for training, manpower, personnel, supply, civil engineering, budget, maintenance data collection, integrated logistics feedback systems, and quality assurance. Knowledge of quality Air Force principles, command certification, support agreements, reimbursement procedures, radioisotope permits and licenses, equipment scheduling, production and materiel control, facility requirements and metrology functions and procedures. They must also be knowledgeable of all environmental standards and ensure adherence to the proper handling and disposal of hazardous materials and waste.

2.4.1.2. Education. Same as required for entry into AFSC 2P031.

2.4.1.3. Training. Same as required for entry into AFSC 2P031.

2.4.1.4. Experience. Qualification in and possession of AFSC 2P071. Also, experience in managing or coordinating training programs and requirements; planning supply, facility, and budget requirements; quality control and assurances programs; integrated logistics support planning; feed back into Air Force Material Command logistics systems to resolve problems; interservice and interdepartmental support agreements; reimbursement procedures; radioisotope permits and licenses; and Directorate of Metrology interaction.

2.4.1.5. Other. Same as required for entry into AFSC 2P031.

2.4.2. Training Sources/Resources. The Senior NCO Academy and unit OJT will be used.

2.4.3. Implementation. The 9-level will be awarded after completing MAJCOM requirements, unit OJT, and promotion to SMSgt. Individuals will attend the Senior NCO Academy after they are selected for promotion to SMSgt.

SECTION D - RESOURCE CONSTRAINTS

1. Purpose. This section identifies known resource constraints which preclude optimal/desired training from being developed or conducted, including information such as cost and manpower. Narrative explanations of each resource constraint and an impact statement describing what effect each constraint has on training are included. Also included in this section are actions required, office of primary responsibility, and target completion dates. Resource constraints will be, as a minimum, reviewed and updated annually.

2. Apprentice Level Training Constraints.

2.1. Constraints. There are no perceived 3-level constraints.

3. Five-Level Training Constraints.

3.1. Constraints. There are no perceived 5-level constraints.

4. Seven-Level Training Constraints.

4.1. Constraints. There are no perceived 7-level constraints.

PART II

SECTION A - SPECIALTY TRAINING STANDARD

DEPARTMENT OF THE AIR FORCE
Headquarters, US Air Force
Washington, DC 20330-1030

STS 2P0X1
(For AFSCs 2P031/51/71)
October 1995

PRECISION MEASUREMENT EQUIPMENT LABORATORY APPRENTICE
PRECISION MEASUREMENT EQUIPMENT LABORATORY JOURNEYMAN
AND
PRECISION MEASUREMENT EQUIPMENT LABORATORY CRAFTSMAN

1. Implementation. This Specialty Training Standard (STS) will be used for training provided by Air Education and Training Command for classes beginning 950831 and graduating 960430.

2. Purpose. As prescribed in AFI 36-2201 this STS:

2.1. Lists in column 1, the tasks, knowledge, and technical references (TR) necessary for airmen to perform in the 3-, 5-, and 7-skill level AFSC in the Precision Measurement Equipment Laboratory career field. These are based on an analysis of the duties in AFMAN 36-2108, effective October 1993 and a proposed change to be implemented in October 1994.

2.2. Shows formal training requirements. Columns 2a and 2c of attachments 1 and 2 show the level to which task/knowledge training has been accomplished by the Training Center, for 2P0X1 3-level and 7-level courses as described in AFCAT 36-2223. When two codes are used in columns 2a and/or 2c, the first code is the established requirement for resident training on the task/knowledge, and the second code indicates the level of training provided in the course due to equipment shortages and other resource constraints.

2.3. Indicates in column 2b, attachments 1 and 2, the career knowledge provided in the 5-level and 7-level CDCs.

2.4. Identifies in column 2d, exportable courses that will be used to enhance students knowledge during 5-level continuation training, 7-level upgrade training, and 7-level continuation training.

2.5. Identifies in columns 3a and 3b, Air Force minimum core task requirements for award of AFSCs 2P051 and 2P071.

2.6. Provides in column 4, OJT certification columns to record completion of task and knowledge training requirements. Certification is accomplished IAW AFI 36-2202 and the procedures outlined below.

2.7. Is a guide for development of promotion tests used in the Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SKTs) are developed at the USAF Occupational Measurement Squadron by senior NCOs with extensive practical experience in their career fields. The test samples knowledge of STS subject matter areas judged by test development team members to be the most appropriate for promotion. Questions are based on the WAPS study references listed in the WAPS catalog published by AFOMS/CC. Individual responsibilities are outlined in AFI 36-2605.

2.8. Becomes a Job Qualification Standard (JQS) for OJT when placed in the AF Form 623, On-The-Job Training Record, and used according to AFI 36-2201 For OJT, the tasks in column 1 are trained and qualified at the go/no go level. "Go" means the individual can perform the task without assistance and meets local requirements for accuracy, timeliness, and correct use of procedures.

2.9. Provides Upgrade Certification Procedures: Prior to upgrade, all 2P0X1 personnel, regardless of duty position, must satisfactorily complete all upgrade training requirements. Trainees must also meet AFSC requirements outlined in AFIs 36-2101 and AFMAN 36-2108, and be task certified on both 5-level and 7-level upgrade core tasks. All 7-level trainees must be certified on both 5-level and 7-level tasks and complete the formal 2P071 AFSC course for upgrade. Due to different equipment at each unit, selected Air Force core tasks on items which are not available at a specific location are not required for upgrade. Work centers may add local upgrade core tasks and non-mandatory tasks to the AFJQS. Completion of non-mandatory tasks, pertinent to the unit, will continue to be accomplished as tasks become available for training. Core tasks identified with an (R) in column 3a/b are optional for AFRES and ANG. However, these tasks should be completed as a part of continuation training as tasks become available.

3. Records Documentation. Entries will be as follows:

3.1.. Identification. Enter trainee's identification data, supervisors/trainers, and certifying official on the AFJQS identification page.

3.2. Certification. Certify tasks (in pencil) as follows:

3.2.1. Certify those tasks that are listed in the STS.

3.2.2. Circle current duty position task numbers. If in upgrade training, these tasks include core tasks commensurate with upgrade skill level. Erase all other circled tasks not applicable to the current duty position.
3.2.3. As task training starts, enter the training start date in column 4a.

3.2.4. When the trainee and trainer agree to task proficiency, the trainer will initial column 4d and the trainee will initial column 4c. For task certification, the certifying official will evaluate the trainee for proficiency. Upon satisfactory task performance, the certifier will enter the completion date in column 4b and initial column 4e.

3.2.5. Selected STS tasks are listed in a dual action format like Remove/Install. Training and time constraints can prevent consecutive task training or certification on both removal and installation. In this situation, divide the trainee, trainer or certifier, and completion date columns with a diagonal (/) to accommodate dual entries. The trainer and trainee will enter an "R" for removal or "I" for installation, and their initials adjacent to either side of the (/) in their respective columns. If separate certifications are required, divide columns 4b and 4e, enter "R" or "I", initials, and completion date.

3.3. Decertification. To decertify an individual who is no longer proficient at a required task, erase all entries associated with the task. A statement will be annotated on the AF Form 623A to reflect the reason for decertification.

3.4. Recertification. Once retraining is started, enter the new training start date. After completing the task to a "go" level, recertify following procedures in paragraph 3b(4).

3.5. Transcription. When necessary, e.g. the STS/JQS is saturated, dirty, mutilated, etc., the supervisor may transcribe data to a new STS/JQS. First, identify current duty position tasks. Second, recertify tasks using current dates in the "completion date" block. The trainer's supervisor will initial in the "certifying official" block. The trainee will initial the "trainee's" block. Tasks previously certified but not required in the current duty position will have only the previous certification date carried forward. Give the old JQS to the trainee to retain in their training history.

4. Proficiency Code Keys. Attachment 1 contains the proficiency code key used to indicate level of training and knowledge provided by resident training and CDCs.

5. Recommendations. Report unsatisfactory performance of individual course graduates using AF Form 1284, Training Quality Report, as prescribed in AFI 36-2201. Report inadequacies and suggested corrections to this STS through channels to 336 TTS/TTO, referencing specific paragraphs. A customer service information line has been installed for the supervisor's convenience to identify graduates who may have received inadequate training on task/knowledge

items listed in this training standard. For a quick response to problems, call our customer service information line, Defense Switched Network (DSN) 597-4566, anytime day or night.

BY THE ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL RONALD R. FOGLEMAN, General, USAF
Chief of Staff

EDWARD A. PARDINI, Colonel, USAF 2 Attachment
Director of Information Management 1. Qualitative Requirements
2. Electronic Fundamentals/
Applications (EF/A)

_____
Supersedes: CFETP 2P0X1, Part II, Section A, dated June 1994

THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY		
NAME OF TRAINEE		
PRINTED NAME *(Last, First, Middle Initial)*	INITIALS *(Written)*	SSAN

PRINTED NAME OF CERTIFYING OFFICIAL AND WRITTEN INITIALS	
N/I	N/I
N/I	N/I
N/I	N/I
N/I	N/I
N/I	N/I
N/I	N/I

QUALITATIVE REQUIREMENTS

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. (PARTIALLY PROFICIENT)
	3	Can do all the parts of the task. Needs only a spot check of completed work. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
*TASK KNOWLEDGE LEVELS	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step by step procedures for doing the task. (PROCEDURES)
	c	Can identify why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, isolate, and resolve problems about the task. (ADVANCED THEORY)
**SUBJECT KNOWLEDGE LEVELS	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)

EXPLANATIONS

* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)

** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks.

\- This mark is used alone instead of a scale value to show that no proficiency training is provided in the course or CDC.

/X This mark indicates level of training provided in the course due to equipment shortages or other resource contraints.

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING				3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT

NOTE 1: TRs listed are representative of test, measurement and diagnostic equipment (TMDE) and applicable standards. Users may annotate training references (TRs) to identify local TMDE availability for upgrade and qualification training. Users are responsible for annotating training references to identify current references pending STS revision.

NOTE 2: Underlined TRs are suggested commercial publications or other service publications that may be used for Specialty Training (ST) and mission accomplishment.

NOTE 3: Items marked with an asterisk (*) in column 1 will be the training standard elements supported when determining wartime resident course length.

NOTE 4: Repair is not accomplished in the resident course. Code levels for troubleshoot/repair in course column 2a and/or 2c refer to any one or a combination of theoretical or "hands-on" troubleshooting or circuit analysis.

NOTE 5: Code levels for use in CDC column 2b refer to any one or a combination of use, theory or circuit analysis.

NOTE 6: Reference paragraphs 5b(3) and 17, IAW AFI 40-201 Atch 8, work must be accomplished by, or under the direct supervision of personnel having completed RADIAC course E3AZR2P071 000.

NOTE 7: Reference paragraph 21, IAW TO 33A6-7-24, personnel working with the A/E 35U SOAP machine must have completed course E3AZR2P051 032.

NOTE 8: Sections 18, 19, 20 and 21 are included as part of this STS for the purpose of establishing a permanent record of specialized training.

NOTE 9: Generic equipment part numbers will be identified in the TRs and parenthesis will be used to denote any type or model or series of equipment used. Actual equipment identified in TRs is just a general reference for Type 3 Training, Career Development Course (CDC) and to satisfy ST training requirements. Type 3 resident course training, CDC and users in the field are not restricted to the equipment or training material identified in the TRs.

NOTE 10: CDCs provide career knowledge only (AFI 36-2201). Specialized knowledge, such as detailed technical order (TO) procedures, peculiar equipment or weapon systems, are learned on the job through actual work experience (AFI 36-2201).

NOTE 11: Items marked wth an asterisk (*/R) in column 3a or 3b are the minimum core tasks that are optional for AFRES and ANG.

1 TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
1. Career Ladder Progression TR: AFMAN 36-2108, AFPAM 36-2618													
a. Progression in career ladder 2P0X1	-	B	-	-									
b. Duties of AFSCs 2P031/51/71	A	B	-	-									
2. Security TR: AFIs 10-1101, 31-401													
a. Specific OPSEC Vulnerability of AFSC 2P0X1	A	B	-	-									
b. Physical Security TR: AFPD 31-1	-	B	-	-									
3. AF Occupational Safety and Health (AFOSH) Program TR: AFI 91-301; AFOSH Std 127-90; TO 31-1-141-1													
a. Hazards of AFSC 2P0X1 TR: AFOSH Std 127-90; other applicable safety directives	A	B	B	B									
b. Use safety practices when working with high voltage equipment TR: Such as TOs 00-25-232, 00-25-234	2b	-	-	-									
4. Hazardous Materials and Waste Handling According to Environmental Standards TR: AFPAM 32-7043, AFJI 23-207													
a. Types of hazardous materials/fluids	B	B	-	C									
b. Handling procedures	B	B	-	C									
c. Storage and labeling	B	B	-	C									
d. Proper disposal	B	B	-	C									
5. Publications and Forms													
a. Publications													
(1) Maintain TMDE Reference Library (TODO) TR: AFPD 21-3; TOs 00-5-1, 00-5-2-2, 00-5-2-102	-	-	A	B									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
5. Publications and Forms (Cont'd)													
*(2) Use indexes to locate publication numbers and titles TR: AFIND 2; TOs 0-1 Series Index, 0-2-1, 0-4-2, 0-4-5, 0-4-6-2, 00-5-1, 00-5-2	2b	-	-	-									
*(3) Use technical information to maintain TMDE TR: Applicable TMDE TOs; Commercial Publications	2b	b	-	-									
*(4) Locate National Stock Numbers (NSN) TR: Applicable Supply Publications; MIL-SPECs; Applicable TOs; D.A.T.A. Series	2b	-	-	-									
(5) Initiate TO improvement reports (AFTO Form 22) TR: TO 00-5-1	b	B	-	-									
(6) Maintain publications library (PDO) TR: AFIs 37-160V7, 37-161	-	-	-	C									
(7) Coordinate development of base TMDE regulation(s) TR: Applicable Directives	-	-	-	-									
b. Forms TR: Such as AFM 66-279; TOs 00-20-14, 33K-1-100-1, 33K-1-100-2													
*(1) Use calibration and correction charts	2b	-	-	-									
*(2) Complete TMDE documentation forms	2b	-	-	-									
(3) Complete RADIAC TMDE documentation forms TR: Such as TOs 00-20-14, 00-110N-3. (See Note 6)	-	-	-	c									
(4) Complete supply forms. TR: AFMAN 23-110 Vol II Part 13	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
6. Supervision													
a. Validate equipment authorization TR: AFMAN 23-110 Vol II Part 13	-	-	-	B									
b. Statement of charges TR: AFR 68-1; DOD 7200.10M	-	-	-	B									
c. Report of Survey TR: AFR 68-1; DOD 7200.10M	-	-	-	B									
d. Schedule TR: AFI 21-101, other applicable directives													
(1) Work assignments	-	-	-	c									
(2) Work priorities	-	-	-	c									
(3) Other activities (such as ancillary training, staff meetings and leave time)	-	-	-	c									
e. Assign TR: AFI 21-101													
(1) Maintenance and repair work	-	-	-	C									
(2) Personnel to positions	-	-	-	C									
f. Supervise personnel tasks TR: AFIs 21-101, 21-109; other applicable directives													
(1) Maintenance	-	-	-	-									
(2) Inspections	-	-	-	-									
g. Analyze maintenance and inspection reports and charts TR: Such as AFI 21-101	-	-	-	c									
h. Prepare TR: Such as AFIs 21-101, 38-101; AFMAN 36-2108													
(1) Maintenance and inspection reports and charts	-	-	-	c									
(2) Organizational and functional charts	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
6. Supervision (Cont'd)													
i. Justify personnel TR: Such as AFIs 21-101, 38-201; AFPAM 38-208	-	-	A	B									
j. Establish TR: AFI 21-101													
(1) Work methods	-	-	-	-									
(2) Work controls	-	-	-	-									
(3) Performance standards	-	-	-	-									
k. Evaluate work performance of subordinate personnel TR: AFI 36-2403	-	-	-	-									
l. Counsel personnel and resolve individual problems TR: AFPAM 36-2241V1; other directives	-	-	-	-									
m. Correct substandard personnel performance TR: AFIs 36-2503, 36-2907, 36-3208	-	-	-	-									
n. Recommend policy changes TR: AFIs 38-203, 38-204; AFPAM 38-208													
(1) Personnel	-	-	-	-									
(2) Equipment	-	-	-	-									
o. Resolve technical problems TR: Applicable Technical Data	-	-	-	-									
p. Participate in USAF Graduate Evaluation Program TR: AFI 36-2201	-	-	-	-									
7. Training TR: Such as AFIs 36-2101, 36-2236; AFMAN 36-2108; AFH 36-2201													
a. Evaluate EST requirements	-	-	-	C									
b. Supervise EST													
(1) Document training	-	-	-	C									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
7. Training (Cont'd)													
(2) Schedule training	-	-	A	C									
(3) Control training functions	-	-	-	C									
c. Conduct training	-	-	-	-									
d. OJT trainer responsibilities													
(1) Prepare training plans and teaching outlines	-	-	-	-				*/R					
(2) Conduct theory and performance training	-	-	-	-				*					
(3) Provide feedback to trainee	-	-	-	-				*					
e. OJT task certifier responsibilities													
(1) Develop training evaluation program	-	-	-	-				*/R					
(2) Evaluate trainee's attainment of training objectives	-	-	-	-				*/R					
(3) Provide feedback to supervisor and trainer on evaluation results	-	-	-	-				*					
8. Metrology Laboratory Management													
a. Basic organization and responsibilities of the LG/OG TR: AFI 21-101	-	-	-	-									
b. Maintenance Data Collection System TR: AFMs 66-279; TOs 00-20-2, 33K-1-100-1/-2													
(1) Function	A	-	-	-									
(2) PMEL Automated Management System (PAMS) TR: Such as AFI 21-113; AFMs 66-279, 66-303 vol 1; TOs 00-20-14, 33-1-27, 33K-1-100-1/-2													
(a) Use	2b	B	C	-									
(b) Schedule TMDE	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
8. Metrology Laboratory Management (Cont'd)													
(c) Print Laboratory status reports	-	-	-	-									
(d) Manage system	-	-	A	-									
c. Schedule equipment into and out of the laboratory TR: Such as AFM 66-279	-	-	A	C									
d. Maintain equipment schedules TR: Such as AFM 66-279	-	-	-	-									
e. Process and control material TR: AFI 21-101; AFR 67-25	-	-	-	-									
f. Coordinate equipment transfers with Traffic Management Office (TMO) TR: AFMAN 23-110 Vol II Part 13	-	-	A	c									
g. Coordinate TMDE supply actions with Base Supply TR: AFMAN 23-110 Vol II Part 13	-	-	A	c									
h. Maintain environmental conditions TR: TO 00-20-14	-	-	A	C									
i. Manage equipment accounts TR: AFMAN 23-110 Vol II part 13	-	-	A	C									
j. Manage laboratory certification program TR: TO 00-20-14	-	-	A	C									
k. Manage RADIAC certification program TR: TOs 00-110N-3,11H4-8-5-1	-	-	B	C									
l. Establish TMDE inter and intra service support agreements TR: AFI 25-201; AFR 177-102	-	-	A	c									
m. Manage budget TR: AFI 65-601V1	-	-	A	B									
n. Coordinate outside agency support TR: AFI 25-201	-	-	-	-									
o. Manage Quality Assurance Program TR: AFI 25-205	-	-	A	C									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
8. Metrology Laboratory Management (Cont'd)													
p. Depot Level Reparables (DLR) TR: Applicable directives	-	B	B	C									
q. Fraud Waste and Abuse/Zero Overpricing TR: AFI 90-301; AFMAN 23-110V7PT4	-	-	-	-									
r. PMEL Facility Operational Requirements TR: AFPAM 21-222; AFMAN 32-1094; TO 00-20-14	-	-	-	B									
9. Maintenance and Inspection Systems and Forms													
a. Inspection systems TR: AFI 21-113	-	-	-	C									
*b. Complete Deficiency Reports TR: TO 00-35D-54	-	B	-	c									
c. Complete Maintenance Data Collection Forms TR: AFM 66-279; TOs 00-20 Series, 33K-1-100-1/-2	-	-	-	-									
*d. Complete Equipment Condition Forms and Tags TR: TO 00-20 Series	-	-	-	-									
10. Metrology Laboratory Maintenance													
a. Practices and Procedures TR: AFI 21-113	B	B	-	C									
b. Electrostatic Discharge Sensitive Devices (ESD) TR: TO 00-25-234	-	-	-	-									
c. Surface Mount Technology (SMT) TR: TO 00-25-234	A	-	-	-									
d. Cable and Connectors TR: Such as TOs 31-10-14, 33-1-32, 33A1-13-579-1	A	-	-	-									
e. Tools TR: Such as TOs 32-1-2, 32-1-101, 32-1-151, 32-1-201	B	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
10. Metrology Laboratory Maintenance (Cont'd)													
f. Bench Stock TR: AFMAN 23-110 Vol II part 13	A	-	-	-									
g. DIFM items TR: AFMAN 23-110 Vol II part 13; TO 00-20-3,	-	-	-	B									
h. Substitution of TMDE standards TR: TOs 00-20-14, 33K-1-100-1/-2, 33K-1-101	B	-	-	-									
11. Job related measurement methods and principles TR: Such as TO 31-1-141 Series; Applicable Commercial Manuals													
*a. Mathematical Computations													
(1) Ratios, Decibels, conversion	B	B	-	-									
(2) Probable errors, correction factors	B	B	-	-									
(3) Gross, systematic or random errors	B	B	-	-									
(4) Calculate TMDE related parameters	b	B	-	-									
*b. Test, Measurement, Diagnostic Equipment (TMDE) circuits													
(1) Analog discrete circuits	B	-	-	-									
(2) Analog integrated circuits	B	-	-	-									
(3) Digital Circuits	B	-	-	-									
(4) Frequency Domain	A	-	-	-									
(5) Frequency Synthesizer	B	B	-	-									
(6) Theoretical Troubleshooting	B	-	-	C									
c. Microwave TR: Such as TO 31-1-141-11	-	B	-	-									
d. Infrared TR: Specific Equipment TO and/or Commercial Data	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
11. Job Related Measurement Methods and Principles (Cont'd)													
e. Temperature TR: Such as NAVAIR 17-35QAL-2	B	B	-	-									
f. Humidity TR: Specific Equipment TO and/or Commercial Data	B	B	-	-									
g. Pressure TR: Such as TO 33-1-19	B	B	-	-									
h. Vacuum TR: Such as TO 33-1-19	B	B	-	-									
i. Vibration TR: Such as TO 33A1-11-39-1 (AF75C); Commercial Data (9610)	-	B	-	-									
j. Force TR: Such as NAVAIR 17-35QAL-2	-	B	-	-									
k. Torque TR: Such as TO 31B14-3-1-101	B	B	-	-									
l. Linear Measurement TR: Such as TOs 32-1-101, 32-1-201	B	B	-	-									
m. Angular Measurement TR: Such as TOs 32-1-101, 32-1-201	-	B	-	-									
n. Mass and Weight TR: Such as NAVAIR 17-35QAL-2	B	B	-	-									
o. Flow TR: Such as NAVAIR 17-35QAL-2	-	B	-	-									
p. Density TR: Such as NAVAIR 17-35QAL-2	-	B	-	-									
q. Viscosity TR: Such as NAVAIR 17-35QAL-2	-	-	-	-									
r. Optics TR: Such as NAVAIR 17-35QAL-9	-	B	-	-									
s. Rotary Motion TR: Such as NAVAIR 17-35QAL-2	-	B	-	-									
t. Sound TR: Such as TOs 33A1-7-206-1(1551-C), 33D7-45-22-1 (2290-9159)	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
11. Job Related Measurement Methods and Principles (Cont'd)													
u. Spectrum Analysis TR: Specific Equipment TO and/or Commercial Data HP-150 Series App Notes	-	B	B	-									
v. Signature Analysis TR: Such as TO 33D7-10-128-1	-	B	-	-									
w. ILS/VOR TR: Such as TO 33A1-3-504-1	-	-	B	-									
12. AC/DC Electrical Measurement Standards/TMDE TR: Such as TOs 33K-1-100-1/-2, 33K Series													
a. Resistance TR: Such as TOs 33A1-12-449-1(240R), 33A1-12-450-1(RS925), 33A1-12-462-1 (SR1010), 33A1-12-689-1 (DB-62), 33A1-12-1373-1 (5450A), 33AA6-13-1 (240R),													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
*(4) Calibrate	2b	-	-	-									
b. Capacitance TR: Such as TOs 33A1-12-439 (707B), 33A1-12-1369-1 (GR1616); Commercial Data (QUAD10)													
(1) Use	-	c	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
c. DC Voltage Divider TR: TO 33AA22-32-1 (720A); Commercial Data (752A)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
12. AC/DC Electrical Measurement Standards/TMDE (Cont'd)													
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
d. AC Ratio Transformer TR: Such as TOs 33AA22-8-1 (RT5), 33AA22-15-1 (DT72)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
e. DC Voltage TR: Such as TOs 33A1-12-1075-1 (332 ( )), 33A1-12-1367-1 (732A), 33A1-12-1385-1 (734A/AF), 33D9-39-63-12 (5440 ( )), 33AA43-7-1 (343 ( ))													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	B	-									
(4) Calibrate	-	-	-	-				*					
f. AC Voltage TR: Such as TOs 33D7-2-54-1 (5205A), 33D7-45-51-1 (5200A), 33D7-45-101 (4708)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	B	-									
(4) Calibrate	-	-	-	-				*					
g. Power Supply TR: Such as TOs 33AA17-110-1 (6202B), 35C1-2-177 (6267( )), 33DA11-75-1 (6434( ))													
*(1) Use	2b	c	-	-			*						

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
12. AC/DC Electrical Measurement Standards/TMDE (Cont'd)													
*(2) Align	2b	-	-	-			*						
*(3) Troubleshoot/Repair	2b	-	-	-			*						
*(4) Calibrate	2b	-	-	-			*						
h. Instrument Calibrator TR: Such as TOs 33A1-2-276-1 (1620A), 33A1-12-1362-1 (5700A), 33A1-12-1366-1 (5725A), 33D7-45-87-1 (5100B), 33D9-39-21-31 (829G)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	B	-				*					
(4) Calibrate	-	-	-	-									
i. Analog Passive Multimeter TR: Such as TOs 33A1-12-773 (260-AFP1), 33A1-12-933-1 (AN/PSM-37), 33A1-15-1187-1 (260-6XLP)													
*(1) Use	2b	c	-	-			*						
*(2) Align	2b	-	-	-									
*(3) Troubleshoot/Repair	2b	-	-	-									
*(4) Calibrate	3c	-	-	-			*						
j. Analog Electronic (Active) Multimeter TR: Such as TO 33A1-12-704 (410C)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
12. AC/DC Electrical Measurement Standards/TMDE (Cont'd)													
k. Digital Multimeter TR: Such as TOs 33A1-12-1149 (8600( )), 33A1-12-1157-1 (3456( )), 33A1-12-1213-1 (8505( )), 33A1-12-1215-1 (8840A/AF), 33A1-12-1350 (3458A) 33D9-57-119 (8506( ))													
*(1) Use	2b	c	-	-			*						
*(2) Align	2b	-	-	-									
*(3) Troubleshoot/Repair	b	B	-	-				*					
*(4) Calibrate	3c	-	-	-			*						
l. High Resistance TMDE TR: Such as TO 33A1-12-234-1 (544( ))													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
m. High Voltage TMDE TR: Such as TOs 33A1-12-120 (MD1), 33A1-12-1053-1 (HD103)													
(1) Use	-	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
n. Generator Detector TR: Such as TOs 33A1-12-925 (801( )), 33D7-22-33 (1238)													
*(1) Use	-	c	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
12. AC/DC Electrical Measurement Standards/TMDE (Cont'd)													
o. AC/DC Transfer Standard TR: Such as TO 33A1-12-1355 (5790A)													
*(1) Use	-	c	-	-				*					
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
p. Phase Standard TR: Such as TOs 33A1-5-496 (650), 33A1-8-822-1 (411); Commercial Data (5000/6000)													
(1) Use	-	b	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
q. Null Detector TR: Such as TO 33A1-6-115-1 (845( ))													
*(1) Use	-	c	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
r. Differential Voltmeter TR: Such as TOs 33A1-12-792-1 (887), 33A1-12-904-1 (893)													
*(1) Use	2b	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	b	-	-	-									
*(4) Calibrate	2b	-	-	-									
s. Clamp-on Voltammeter TR: Such as TO 33A1-12-212 (633VA1)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
12. AC/DC Electrical Measurement Standards/TMDE (Cont'd)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
t. Ohmmeter TR: Such as TO 33A1-12-850-1 (670A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
u. AC Voltmeter TR: Such as TOs 33A1-12-349-31 (400E), 33A1-12-643-1 (3400( )), 33A1-12-1094-1 (3015( ))													
(1) Use	2b	-	-	-			*						
(2) Align	2b	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	2b	-	-	-									
v. RF Millivoltmeter TR: Such as TOs 33A1-12-665-1 (411 ( ), 33A1-12-949-1 (92A-S2)													
(1) Use	2b	-	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
w. High Voltage Probe TR: Such as TO 33AA22-31-1 (80F-15); Commercial Data (2900A)													
(1) Use	-	-	-	-			*						
(2) Align	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
12. AC/DC Electrical Measurement Standards/TMDE (Cont'd)													
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
x. AC/DC Current Shunt TR: Such as Commercial Data (A45/AF)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Repair/Troubleshoot	-	-	-	-									
(4) Calibrate	-	-	-	-									
y. Standard Cell Enclosure TR: Such as TO 33A1-12-327-1 (9152P)													
(1) Use	-	-	-	-									
(2) Intercomparison	-	B	-	-									
(3) Calibration	-	-	-	-									
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE TR: Such as TO's 33K-1-100-1/-2, 33K3 Series													
a. Semiconductor Tester TR: Such as TO 33A1-12-1186-1 (7CTIN)													
(1) Use	-	-	-	-									
b. Time Domain Reflectometer TR: Such as TO 33A1-4-73 (1502)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	B	-	-									
(4) Calibrate	-	-	-	-									
c. Function Generator TR: Such as TOs 33A1-8-840 (142), 33A1-8-847-1 (FG502), (33A1-8-877-1 (3325( ))													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE (Cont'd)													
(1) Use	2b	c	-	-			*						
(2) Align	b	-	-	-									
(3) Troubleshoot/Repair	2b	-	-	-									
(4) Calibrate	2b	-	-	-									
d. Pulse TMDE TR: Such as TOs 33A1-8-394-1 (214A), 33A1-8-773-11 (8005), 33A1-8-784 (PG506), 33A1-8-809-1 (PG502), 33A1-8-886-1 (214B)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	b	-	-	-									
(4) Calibrate	2b	-	-	-									
e. Time Mark Generator TR: Such as TO 33A1-8-776 (TG-501)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	b	-	-	-									
(4) Calibrate	2b	-	-	-									
f. Constant Amplitude Generator TR: Such as TOs 33A1-8-780 (SG503), 33A1-8-816-1 (SG504)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	b	-	-	-									
(4) Calibrate	2b	-	-	-									
g. Standard Sampling System TR: Such as TOs 33A1-8-748-1 (S4), 33A1-13-423 (7S11), 33A1-13-424 (7T11), 33A1-13-434 (S1)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE (Cont'd)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
h. Signal Generator/Test Oscillator TR: Such as TOs 33A1-8-523 (652A), 33A1-8-760-31 (8640B), 33D7-56-27 (1316)													
(1) Use	2b	-	-	-			*						
(2) Align	2b	-	-	-				*					
(3) Troubleshoot/Repair	2b	-	-	-				*					
(4) Calibrate	2b	-	-	-									
i. Frequency Synthesizer TR: Such as TOs 33A1-8-851-1 (8672A), 33A1-8-955-1 (8673), 33A1-8-1059 (8673E)													
(1) Use	1b	-	B	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	B	-									
(4) Calibrate	-	-	-	-				*					
j. Feedthrough Load TR: Applicable Commercial Data													
(1) Use	2b	-	-	-			*						
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
k. Distortion Analyzer TR: Such as TO 33A1-5-269-11 (334A)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE (Cont'd)													
*(1) Use	2b	c	-	-			*						
(2) Align	2b	-	-	-									
(3) Troubleshoot/Repair	2b	-	-	-									
*(4) Calibrate	2b	-	-	-									
l. Modulation Analyzer TR: Such as TO 33D7-10-152-1 (8901A)													
(1) Use	2b	c	-	-				*					
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
m. Spectrum Analyzer TR: Such as TOs 33A1-13-607 (8592( )), 33D7-10-129-1 (8566A), 33D7-10-151-22 (496( ))													
*(1) Use	2b	B	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	B	-				*					
(4) Calibrate	-	-	-	-									
n. Precise Frequency TR: Such as TOs 33D7-12-26 (680), 33D7-12-136-1 (888A); Commercial Data (2100F)													
(1) Use	2b	b	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
o. Logic Analyzer TR: Such as TOs 33D7-10-124-1 (1615A), 33D7-10-180 (PI540)													
(1) Use	-	c	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE (Cont'd)													
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
p. Comb Generator TR: Such as TO 33A1-5-251 (8406A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
q. Crystal Control Oscillator TR: Such as TO 33A1-8-552-1 (105A/B)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
r. Electronic Counter/Timer TR: Such as TOs 33A1-5-422-11 (5328A/AF096), 33A1-10-200-1 (5345( )), 33A1-10-254-1 (5335( )), 33A1-10-278 (5334( )), 33A1-10-287-1 (1992( )), 33A1-10-293 (548( )); Commercial Data (PM6654C/AC)													
*(1) Use	2b	c	-	-			*						
(2) Align	-	-	-	-									
*(3) Troubleshoot/Repair	2b	-	-	-									
*(4) Calibrate	3c	-	-	-									
s. Vector Voltmeter TR: Such as TO 33A1-12-734-1 (8405A)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE (Cont'd)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
t. Oscilloscope TR: Such as TOs 33A1-13-491 (7000 Series), 33A1-13-496 (AN/USM-425), 33A1-13-591-2 (2246)													
*(1) Use	2b	c	-	-			*						
(2) Align	2b	-	-	-									
*(3) Troubleshoot/Repair	2b	B	-	-									
*(4) Calibrate	3c	-	-	-			*						
u. Differential Plug-in Units TR: Such as TO 33DA17-12-11 (7A13)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
v. Oscilloscope Calibration Fixture Plug-in Units TR: Such as TO 33AA41-3-11													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
w. Thermal Voltage Converters TR: Applicable Commercial Data													
(1) Use	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
13. Time, Time Domain, Frequency, Frequency Domain, Data Domain and Waveform Analysis Standards/TMDE (Cont'd)													
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
x. Oscilloscope, Digital, Waveform Digitizing TR: Such as TOs 33A1-13-526 (7854), 33A1-13-575-2 (2465A), 33A1-13-583 (54111D), 33A1-13-586 (54110D)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
y. Storage Oscilloscope TR: Such as TOs 33A1-1-13-464 (7623), 33A1-13-483-1 (7613), 33A1-13-510-2 (464)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
14. Microwave Measurement STDs/TMDE TR: Such as TOs 33K-1-100-1/-2, 33K Series; Commercial Data													
a. Attenuator TR: Such as TOs 33AA36-10-1 (8491, 33AA36-33-1 (8496)													
(1) Use	1b	-	B	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
14. Microwave Measurement STDs/TMDE (Cont'd)													
b. Waveguide/Coaxial Directional Coupler TR: Such as TOs 33A1-12-1230-1 (1852( )), 33D7-13-17-1 (752), 33DA100-5-1 (779( ))													
(1) Use	-	b	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
c. Thermistor Mount TR: Such as TO 33A1-9-52-1 (8478A/B)													
(1) Use	1b	b	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
d. Power Sensor TR: Such as TO 33A1-7-270 (8481A/H)													
(1) Use	2b	b	B	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
e. Power Meter TR: Such as TOs 33A1-7-205-1 (432A), 33A1-7-261-1 (436A)													
(1) Use	2b	b	B	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
14. Microwave Measurement STDs/TMDE (Cont'd)													
f. Termination TR: Such as TOs 33AA7-67-1 (914A/B), 33AA7-78-1 (905A)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
g. Measuring Receiver TR: Such as TOs 33A1- 5-478-1 (1295), 33A1-10-296 (8902( ))													
(1) Use	1b	b	-	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
h. Detector TR: Such as TO 33A1-5-330-1 (423A)													
(1) Use	1b	b	-	-			*						
(2) Troubleshoot/Repair	-	-	-	-									
i. Network analyzer TR: Such as TOs 33D7-10-64, 33D7-10-186 (85100), 33D7-20-45 (8410B, 8411A, 8413A)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
j. SWR Meter TR: Such as TO 33A1-6-33 (415B/E)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
14. Microwave Measurement STDs/TMDE (Cont'd)													
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
k. Swept Frequency Generator TR: Such as Tos 33A1-8-943-1, 33A1-8-955-1 (8643), 33A1-8-1054-1, 33A1-12-704-11 (8620C SYS), 33A1-12-941-1 (8340B)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
l. Frequency Meter TR: Such as TO 33A1-5-157-1 (537A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
m. RF Wattmeter TR: Such as TO 33A1-5-317 (TS1771AU)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
n. RF Sampling Voltmeter TR: Such as TO 33A1-12-868-1 (3406A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
14. Microwave Measurement STDs/TMDE (Cont'd)													
o. Wattmeter Calibrator TR: Such as TO 33A1-2-268 (SSPAO240-22/6140)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
p. Power Standard TR: Such as TOs 33A1-12-1230-1 (1852( )), 33K-1-100-1 (NOTE N40)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
q. Peak Power Calibrator TR: Specific Equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
r. Power Meter Calibrator TR: Such as TOs 33A1-7-226 (8477A), 33D7-45-76-1 (11683A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
14. Microwave Measurement STDs/TMDE (Cont'd)													
s. RF Peak Power Meter TR: Such as TOs 33A1-7-263-11 (1018( )), 33A1-7-299 (8501/8502)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
t. Power Measurement Calibration System TR: Commercial Data (PMCS1A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
u. Phase Noise Measurement TR: Such as Commercial Data (3048MS, 8902MS)													
(1) Use	-	-	B	-				*					
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
v. Microwave Measurement Systems (8902 MMS) TR: Applicable Commercial Data													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
w. Noise Figure Measurement TR: Such as TO 33A1-6-164 (8970B); Commercial Data (8970BE-09)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
14. Microwave Measurement STDs/TMDE (Cont'd)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
15. Physical Measurement Standards/TMDE TR: Such as TOs 33K-1-100-1/-2, 33K Series													
a. Nonpowered Linear Standards TR: Such as TO 32-2-201 (88) (GG0635)													
(1) Use	2b	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
b. Electrical Linear Measurement Standards TR: Such as Commercial Data (432)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
c. Linear Measuring TMDE TR: Such as TO 32-1-201 (GGGC105) (GGGC111)													
(1) Use	2b	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	2b	-	-	-			*						
d. Angular Standards TR: Such as TO 32-1-201 (88) (16AA) (51D23054)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
15. Physical Measurement Standards/TMDE (Cont'd)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
e. Angular Measuring TMDE TR: Such as TOs 33-1-201 (GGGL211B), 33D9-57-27-1 (TB107)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
f. Temperature Standards TR: Such as TO 33C3-16-1 (3.5B-67248); Commercial Data (CS77, PRTs); Commercial Data (5303, 5309); Commercial Data (3605-1-101)													
(1) Use	b	-	B	-				*					
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate/Acceptance Inspection	-	-	-	-									
g. Temperature Measuring TMDE TR: Such as Commercial Data (77)													
(1) Use	b	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	b	-	-	-				*					
h. Humidity Measuring TMDE TR: Such as Commercial Data (566, 08T2P, SA760A)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
15. Physical Measurement Standards/TMDE (Cont'd)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
i. Vacuum Standards TR: Such as TOs 33A7-4-43-1 (2200), 33C2-91-1 (80-6); Commercial Data (PVS-1-10)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
j. Vacuum Gages TR: Such as Commercial Data (GV3)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
k. Pressure Standards TR: Such as TO 33A6-4-7-1 (10-10525); Commercial Data (3682)													
(1) Use	2b	-	b	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
l. Primary Pressure Standards TR: Such as TO 33A6-4-15-1 (120X); Comm. Data (2465-601-58500)													
(1) Use	-	-	B	-				*					

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
15. Physical Measurement Standards/TMDE (Cont'd)													
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
m. Pressure Gages TR: Such as TO 33-1-19													
(1) Use	2b	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	3c	-	-	-			*						
n. Mass and Weight Standards TR: Such as Comm. Data (1100, S1)													
(1) Use	2b	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
o. Weight/Scales TR: Such as Comm. Data (Class 2 & 3)													
(1) Use	2b	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	2b	-	-	-									
p. Tachometer Standards TR: Such as Comm. Data (H8224-837837), TO 33D2-6-210-1 (160.01)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
15. Physical Measurement Standards/TMDE (Cont'd)													
q. Tachometer Measuring TMDE TR: Such as TO 33D2-6-102													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
r. Torque Standards TR: Such as TO 33A3-4-15 (TTU30( )); Commercial Data (CDI2000) (CDT 2400)													
(1) Use	2b	-	-	-			*						
(2) Align	-	-	B	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
s. Torque TMDE TR: TO 32B14-3-1-101													
(1) Use	2b	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	3c	-	-	-			*						
t. Tensiometers TR Such as TOs 33A3-3-3-21/-31 (1973TYPEC8, 1973TYPEC9)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
u. Force Standards TR: Such as TO 33C2-75 (800260)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
15. Physical Measurement Standards/TMDE (Cont'd)													
(1) Use	-	-	B	-			*						
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
v. Force Measuring TMDE TR: Such as TO 35B2-2-2-31 (C1)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
w. Surface Plates TR: Such as TO 32A19-51-1 (GGGP463)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
x. Vibration Standards/Pickups TR: Such as TO 33A1-11-39-1 (AF75C), Commercial Data (9610)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
y. Vibration TMDE TR: Such as TO 33A1-11-39-1													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
15. Physical Measurement Standards/TMDE (Cont'd)													
(4) Calibrate	-	-	-	-									
z. Flow Standards TR: Such as TOs 33A6-3-45 (31TA2073-1-( )), 33DA39-52-3 (QAF-24-VWR-1SC); Commercial Data FCS-3A-SS-C													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
aa. Oxygen TMDE TR: Such as TOs 15X-1-102, 37C11-1-1													
(1) Use	-	b	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
16. Optical Standards/TMDE													
a. Collimators/Autocollimators TR: Such as Commercial Data (714010, D600)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
b. Optical Refractors/Mirrors TR: Such as TO 33B4-8-9-1 (2120665-006); Commercial Data (D616, 290)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
16. Optical Standards/TMDE (Cont'd)													
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
c. Boresight Fixtures TR: Such as Commercial Data (583-202001-11)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
d. Theodolites, Transits, Optical Levels TR: Such as TO 49A8-4-1 (T-2); Commercial Data (D626, 75( ))													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
e. Short range calibrator TR: Applicable Commercial Data													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
17. Radiac Standards/TMDE (See Note 6) TR: Such as TOs 00-20-14, 00-110N-3, 33-1-100-1, 33K Series													
a. Alpha Source TR: Such as TO 11H4-8-4-1 (PU239)													
(1) Use	-	-	-	-									
b. Beta and Gamma Sources TR: Such as TO 11H4-8-5-1 (CS137, D0062)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
17. Radiac Standards/TMDE (See Note 6) (Cont'd)													
(1) Use	-	-	-	-									
c. Alpha Detector TR: Such as TOs 11H4-4-2-31, 11H4-4-2-32, 11H4-4-2-33 (AN/PDR-56)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
d. Beta and Gamma Detector TR: Such as TOs 11H4-6-1-1, 11H4-7-3-41, 11H4-7-3-201 (AN/PDR-27T)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
18. F-15 TMDE TR: Specific Equipment TO and/or Commercial Data													
a. BDX 6200 TR: Specific Equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Repair	-	-	-	-									
b. Common Programming Devices (CPD) TR: Specific Equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Repair	-	-	-	-									
c. Control Stick Boost and Pitch Controller (CSBPC) TR: Specific Equipment TO and/or Commercial Data													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(1) Align	-	-	-	-									
(2) Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
d. Digital Synchro Converter TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	B	-									
(3) Calibrate	-	-	-	-									
e. Gun Control Test Set TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
f. Instrument Landing System (ILS) Test Set TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
g. Input/Output Simulator TR: Specific Equipment TO and/or Commercial Data													
(1) Use	-	-	B	-									
(2) Troubleshoot/Repair	-	-	-	-									
h. Load Force Simulator TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(3) Calibrate	-	-	-	-									
i. Magnetic Azimuth Simulator Detector TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
j. Microwave Noise Analyzer TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
k. Microwave Synthesizer System (MSS) TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
l. Modulated Microwave Source (Watkins-Johnson) TR: Specific Equipment TO and/or Commercial Data													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
m. Phase Meter TR: Specific Equipment TO and/or Commercial Data													

1 TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
n. Power Head and RF Power Meter TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
o. Programmable Ratio Transformer TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
p. Programmable Waveform Generator TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
q. Programming Box TR: Specific Equipment TO and/or Commercial Data													
(1) Use	-	-	B	-									
(2) Troubleshoot/Repair	-	-	-	-									
r. RF Measurement/Stimuli Drawers TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(3) Calibrate	-	-	-	-									
s. Sampling Waveform Digitizing System (SWDS) TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
t. Supervisory Control System Test Set TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
u. Suppressed Carrier Modulator TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
v. TEWS Intermediate Support System (TISS) AN/ALM-246 TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
w. Transfer Function Analyzer TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	B	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(3) Calibrate	-	-	-	-									
x. Waveguide interlocks TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
y. X-Band Signal Source TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
z. Aircraft Weapons Control Test Set AE24T-169 TR: TO 33D5-16-72-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
aa. Missile Launch Pylon Test Set AE24T-170 TR: TO 33D5-30-4-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
bb. Weapons Firing Circuit Test Set AE24T-171 TR: TO 33D5-3-46-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
cc. Weapons Firing Test Set Stray Voltage Detector 372-2/AO6G2621 TR: TO 33D5-3-46-1													
(1) Align	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
dd. Ignition Test Set A/E24T-116 (PWA 50025H) TR: TO 33D4-6-515-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
ee. IFSS Signal Generator 1992604 TR: TO 33A1-8-717-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
ff. Mach Simulator AE24T-137 TR: TO 33D4-6-518-1													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
gg. Countermeasure Test Set AN/ALM-231 TR: TO 33D7-13-88-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
hh. Temperature Control Unit 700323-1 TR: TO 33C3-25-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
ii. Phase Sensitive Converter 1997006-1 TR: TO 33D7-17-47-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
jj. Angle Position Indicator 2129519, 2129518 TR: TOs 33D7-29-29-1, 33D7-29-39-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
kk. AM/FM Signal Generator 1993120 TR: TO 33A1-8-755-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
ll. Test Station Digital Multimeter 1993101 TR: TO 33D7-20-54-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
mm. Test Station Frequency Counter 2129607, 2129608 TR: TO 33A1-10-179-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
nn. Pulse Generator 10060338 TR: TO 33A1-8-785-1E													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
oo. X-Band Signal Generator 1993126 TR: TO 33A1-8-722-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
pp. Precision Synchro Signal Converter (PSSC) 3597141-( ) TR: TO 33D7-17-74-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
qq. Pressure Pneumatic Generator 3595000-( ) TR: TO 33D2-28-15-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
rr. Secondary Power System Test Set 68D170009-1001 TR: TO 33D7-38-129-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
ss. Microwave Signal Generator 1993213 TR: TO 33A1-8-720-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
18. F-15 TMDE (Cont'd)													
(3) Calibrate	-	-	-	-									
tt. Avionics Test Station - Spectrum Analyzers TR: TOs 33A1-8-720-1 (1993213), 33D7-10-129-1 (3598942), 33D7-77-11-1 (2141886)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
uu. Phase-Noise Measurement Console 3048A-E41 TR: Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
19. F-15E Peculiar Items TR: Specific Equipment TO and/or Commercial Data													
a. STORES Management Subsystem AE24T-197 TR: TO 33D5-63-5-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
b. Fire Control System Test Set AE24T-198 TR: TO 33D5-12-231-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
c. RF Power Test Set TS2059AWM18 TR: TO 33D5-12-152-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
19. F-15E Peculiar Items (Cont'd)													
(3) Calibrate	-	-	-	-									
d. Calibration Controller A06G2990 TR: TO 33D7-45-88-1													
(1) Use	-	-	-	-									
e. Calibration Module 654334-1 TR: TO 33D7-33-247-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
f. Remote Map Reader PIU A06G2860-1 TR: TO 33D7-50-1297-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
g. Air Inlet Control PIU A06G2864-1 TR: TO 33D7-50-1439-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
h. Air Data Computer A06G2865-1 TR: TO 33D7-50-1426-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
i. UHF Receiver-Transmitter PIU A06G2867-1 TR: TO 33D7-50-1474-1													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
19. F-15E Peculiar Items (Cont'd)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
j. IFF Receiver-Transmitter PIU A06G2868-1 TR: TO 33D7-50-1401-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
k. TACAN unit PIU A06G2869-1 TR: TO 33D7-50-1400-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
l. ILS Unit PIU A06G2870-1 TR: TO 33D7-50-1341-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
m. LIATE AN/AAM82 TR: TO 33D7-45-90-8-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
n. RF Comp Test Set 0Q416AAM82 TR: TO 33D7-45-90-8-1													
(1) Align	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
19. F-15E Peculiar Items (Cont'd)													
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
o. Electro Opt Comp Test Set 0Q422AAM82 TR: TO 33D7-45-90-8-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
p. Pulse Generator 1993130-4 TR: TO 33A1-8-721-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
q. Pressure Test Set 1993124 TR: TO 33D2-28-11-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
r. Rubidium Frequency Standard 6406802-( ) TR: TO 33A1-5-502-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
s. Noise Analyzer 1992528-4 TR: TO 33D7-10-76-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
19. F-15E Peculiar Items (Cont'd)													
(3) Calibrate	-	-	-	-									
t. Pressure Standard PWA56038 TR: TO 33D4-6-712-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
u. Guided Missile Launcher Test Set AE24T-140 TR: TO 33D9-45-34-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
v. Armament System Test Set AN/AWM-72 TR: TO 33D5-12-208-1													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
20. F-16 TMDE TR: Specific Equipment TO and/or Commercial Data													
a. Avionics Multiplexers (AMUX) TR: Specific Equipment TO and/or Commercial Data (624-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
b. Chaff/flares Dispenser Test Set TR: Specific Equipment TO and/or Commercial Data (AN/ALM-177-B)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
20. F-16 TMDE (Cont'd)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
c. Emergency Power Unit (EPU) TR: Specific Equipment TO and/or Commercial Data (912476-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
d. Permissive Action Link/Unique Signal Generator Multiplexer (PAL/USG/MUX) TR: Specific Equipment TO and/or Commercial Data (568-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
e. Photometric Bench TR: Specific Equipment TO and/or Commercial Data (2120270-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
f. Preload Armament Circuit Test Set TR: Specific Equipment TO and/or Commercial Data (16U75060-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
20. F-16 TMDE (Cont'd)													
g. STORES Management System (SMS) Breakout Box TR: Specific Equipment TO and/or Commercial Data (16UE75517-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
h. STORES Management System (SMS) TR: Specific Equipment TO and/or Commercial Data (16U75501-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	B	-									
(3) Calibrate	-	-	-	-									
i. STORES Release Equipment (SRE) TR: Specific Equipment TO and/or Commercial Data (16U75500-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
j. Electrical Engine Test Set TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
k. Brake Pressure Test Set TR: Specific Equipment TO and/or Commercial Data (10012-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
20. F-16 TMDE (Cont'd)													
l. EPU Sensing Monitor TR: Specific Equipment TO and/or Commercial Data (16U42554-)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
m. Display Monitor TR: Specific Equipment TO and/or Commercial Data (606*)20.													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
n. Service Life Monitor Test Set TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
o. Engine Warning Test Set TR: Specific Equipment TO and/or Commercial Data													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
p. Omnical TR: Commercial Data (AN6520-4A110)													
(1) Use	-	-	B	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORTABLE COURSE 5	d. EXPORTABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
20. F-16 TMDE (Cont'd)													
q. Pneumatic Function Controller TR: Specific equipment TO and/or Commercial Data (909800-31-1)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
21. Special TMDE TR: TOs 33K-1-100-1, 33K Series													
a. Combustible/Toxic Gas Alarms/Analyzers TR: Such as TOs 11H5-14-1 (R2), 11H5-20-1 (TBC-1), 11H2-9-1 (AE23T4) (AE23T5), (M8A1)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
b. TACAN Test Set TR: Such as TO 33D2-8-356 (AN/ARM135A)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
c. ILS/VOR Test Sets TR: Such as TOs 33A1-3-504 (AN/ARM-186), 33A1-3-504 (AN/ARM-186, 972Q-4) 33A1-8-843 (479S6)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
d. IFF/SIF Transponder Test Set TR: Such as TOs 33A1-3-426 (ANUPM-137A), 33DA123-13 (ANAPM424V2), 33D7-29-52-1 (ANAPM-424), 33D9-62-5 (AN/APM-270V3)													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
21. Special TMDE (Cont'd)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
e. Joint Oil Analysis Program (See Note 7) TR: Such as TO 33A6-7-24 (A/E 35U-3)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
f. Engine Trim Boxes, Jetcal Test Set TR: Such as TOs 33D4-6-556-1 (AE24T141/PWA 50081), 33D4-6-555-1 (BH112JB40)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
g. ACFT Engine Test Stand, Test Stand Calibration Trailer TR: Such as TOs 00-25-238, 33D4-6-212-41 (AM37T-20, AM37T-21), 33D4-6-680 (AM99T-2)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
h. Munitions Test Set TR; Specific equipment TO and/or Commercial Data such as AN/GJM-55													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
21. Special TMDE (Cont'd)													
i. Air Data Test Sets, Environmental Test Sets TR: Such as TOs 33D2-39-26-1 (TTU4150( )), 33D7-3-60 (TTU205( ))													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
j. Emergency Radio Test Set TR: Such as TO 33D7-71-42-1 (TS24B)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
k. Telecommunication TMDE TR: Such as TOs 33A1-8-1041 (8328A), 33A1-13-505-1 (3551A), 33A1-15-42 (3555); (4935A); (HATS2), (FM/AM1500)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
l. Missile Guidance TMDE TR: Specific equipment TO and/or Commercial Data (TS 4044( )) AN/DSM 162													
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
m. Coolant Recharging Unit TR: Commercial Data (GCU-30/E)													
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
21. Special TMDE (Cont'd)													
(3) Calibrate	-	-	-	-									
n. Radar (bombing, navigation) TMDE TR: Specific equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
o. Doppler Radar TMDE TR: Specific equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
p. Infrared Target Simulator TMDE TR: Specific equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
q. Guidance Control Systems (CGS) TMDE TR: Specific equipment TO and/or Commercial Data													
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
r. Interrogator/Transponder Electronic Warfare Systems TMDE TR: Such as TO 33D7-8-115-1 (AN/APM-427)													
(1) Use	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
21. Special TMDE (Cont'd)													
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
s. LANTIRN Support Equipment													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
t. Radio Receiver Test Sets TR: Such as TO 33D7-36-42-1 (AN/GRM-112)	-	-	-	-									
(1) Use	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate													
u. Countermeasures Test Set TR: Such as Commercial Data (AN/ALM-233C)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
v. Angle Position Indicator TR: Such as TOs 33AA45-7 (8300 ( )), 33D7-20-72-1 (545A)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT
21. Special TMDE (Cont'd)													
w. Synchro/Resolver Standard TR: Such as TOs 33D2-8-302 (A202S5), 33D7-8-98-1 (530S741)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
x. Fuel Quantity Test Sets TR: Such as TO 33D2-3-86 (GTF6)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									
y. Radio Frequency Transmission Line Test Set TR: Commercial Data (AN/USM-638)													
(1) Use	-	-	-	-									
(2) Align	-	-	-	-									
(3) Troubleshoot/Repair	-	-	-	-									
(4) Calibrate	-	-	-	-									
z. Oxygen Regulator Field Tester TR: Such as TOs 33D2-10-55-1 (31TA655-2), 33D2-10-67-1 (3300223-6001)													
(1) Align	-	-	-	-									
(2) Troubleshoot/Repair	-	-	-	-									
(3) Calibrate	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING				3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINE	e. CERT

STS SUMMARY OF CHANGES

This STS was revised based upon inputs from the using commands during an annual review. The following paragraphs and/or subparagraphs of STS dated June 1994, indicate that a change, an addition or deletion have been incorporated into this STS dated October 1995.

The following paragraphs (Para) were either added, changed or deleted:

Note 10 changed

Para 1: changed

Para 2: 2a, 2f, 2g, 2h, and 2I changed

Para 3: 3a added B to 7 LVL

Para 4: 4a, 4b, 4c,and 4d changed

Para 5: 5a(1), 5a(2), 5a(6), 5b(3), and 5b(4) changed

Para 6: 6a, 6b, 6c, 6d (1), 6d (2), 6d (3), 6e(1), 6e(2), 6g, 6h, 6I, and 6n changed; 6j(4) added

Para 7: 7, 7a, 7b(1), 7b(2), and 7b(3) changed

Para 8: 8a, 8b(2), 8c, 8f, 8g, 8h, 8i, 8j, 8k,8l, and 8m through 8p changed; 8r added

Para 9: 9a and 9b changed

Para 10: 10a, 10d, and 10f changed

Para 11: 11b(6), 11I, and 11u changed

Para 12: 12a, 12b, 12d, 12f, 12h, 12h(3), 12i(4), 12j, 12o, 12r through 12v, and 12y changed; 12s deleted

Para 13: 13g, 13 j, 13l through 13n, and 13r changed

Para 14: 14g through 14h changed; 14t added; 14t through 14w renumbered

Para 15: 15a, 15d through 15e, 15j through 15k, 15o, and 15s through 15aa changed; 15b and 15t added

Para 17: 17a through 17b changed

Para 18: 18a through 18b, 18d, 18g, 18j through 18l,18q, 18s, 18u through 18v, 18 z, 18aa through 18ff, 18ll, 18mm, and 18tt changed

Para 19: 19c changed; 19d through 19w renumbered

Para 20: 20a(3), 20c(3), and 20l(3) changed

Para 21: 21c, 21i through 21m, 21r and 21s changed; 21u, 12v, 12w, 12x, 12y, and 12z added

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING				3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT

NOTE 1: This attachment identifies the Air Force standardized STS electronic fundamentals and applications STS entries.

NOTE 2: Only those electronic fundamentals and applications items in column 2 that have a training code in the course or CDC columns are trained to the specified level. Items that are "/X" will be incorporated into the course when resources become available. Items with the proficiency level code in parentheses ( ), all or part of the proficiency is obtained in the equipment portion of the course.

NOTE 3: Users may annotate additional devices or circuits not identified by this attachement that are specific to their AFSC IAW AFI 36-2201.

NOTE 4: Items in column 1 marked with an asterisk (*) are the tasks/knowledge items that are taught in the resident wartime course.

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
*1. BASIC TERMS TR: TOs 31-1-141-2, 31-1-141-5													
a. Metric notation	B	-	-	-									
b. DC terms	B	-	-	-									
c. AC terms	B	-	-	-									
*2. BASIC CIRCUITS TR: TOs 31-1-141-2, 31-1-141-9													
a. Theory of operation	B	-	-	-									
b. Troubleshoot circuits	2b	-	-	-									
*3. BASIC CIRCUIT CALCULATIONS TR: TO 31-1-141-5													
a. DC	B	-	-	-									
b. AC	B	-	-	-									
*4. RESISTORS TR: TOs 31-1-141-2, 31-1-141-15													
a. Theory of operation	B	-	-	-									
b. Isolate faulty resistors	2b	-	-	-									
c. Color code	B	-	-	-									
*5. RELAYS AND SOLENOIDS TR: TOs 31-1-141-2, 31-1-141-3													
a. Relay theory of operation	B	-	-	-									
b. Isolate faulty relays	2b	-	-	-									
c. Solenoid theory of operation	B	-	-	-									
d. Isolate faulty solenoids	-	-	-	-									
*6. INDUCTORS TR: TOs 31-1-141-2, 31-1-141-15													
a. Theory of operation	B	-	-	-									
b. Isolate faulty inductors	2b	-	-	-									
c. Calculations	B	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
7. CAPACITORS TR: TOs 31-1-141-2, 31-1-141-5, 31-1-141-15													
*a. Theory of operation	B	-	-	-									
*b. Isolate faulty capacitors	2b	-	-	-									
*c. Calculations	B	-	-	-									
d. Color code	-	-	-	-									
*8. TRANSFORMERS TR: TOs 31-1-141-2, 31-1-141-5, 31-1-141-15													
a. Theory of operation	B	-	-	-									
b. Isolate faulty transformers	2b	-	-	-									
c. Calculations	B	-	-	-									
9. THREE PHASE TRANSFORMERS TR: TOs 31-1-141-2, 31-1-141-15													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty three phase transformers	-	-	-	-									
10. DC MOTORS TR: TOs 31-1-141-2, 31-1-141-9													
a. Theory of operation	-	-	-	-									
b. Troubleshoot DC motors	-	-	-	-									
11. AC MOTORS TR: TOs 31-1-141-2, 31-1-141-9													
a. Theory of operation	-	-	-	-									
b. Troubleshoot AC motors	-	-	-	-									
12. DC GENERATORS TR: TOs 31-1-141-2, 31-1-141-9, 31-1-141-13													
a. Theory of operation	-	-	-	-									
b. Troubleshoot DC generators	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
13. AC GENERATORS TR: TOs 31-1-141-2, 31-1-141-9, 31-1-141-13													
a. Theory of operation	-	-	-	-									
b. Troubleshoot AC generators	-	-	-	-									
14. ALTERNATORS TR: TOs 31-1-141-2, 31-1-141-9													
a. Theory of operation	-	-	-	-									
b. Troubleshoot alternators	-	-	-	-									
15. SYNCHRO/SERVOS TR: TOs 31-1-141-2, 31-1-141-9													
a. Theory of operation	-	-	-	-									
b. Troubleshoot synchro/servos	-	-	-	-									
16. CHOPPERS (SYNCHRONOUS VIBRATORS) TR: TO 31-1-141-2													
a. Theory of operation	-	-	-	-									
b. Isolate faulty choppers	-	-	-	-									
17. TRANSDUCERS TR: TOs 31-1-141-3, 31-1-141-13													
a. Theory of operation	-	-	-	-									
b. Isolate faulty transducers	-	-	-	-									
18. METER MOVEMENTS TR: TOs 31-1-141-2, 31-1-141-7, 31-1-141-14C													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty meter movements	-	-	-	-									
19. SOLID STATE DIODES TR: TOs 31-1-141-4, 31-1-141-15													
*a. Theory of operation	B	-	-	-									
*b. Isolate faulty solid state diodes	2b	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
c. Specifications	-	-	-	-									
d. Color Code	-	-	-	-									
20. BIPOLAR JUNCTION TRANSISTORS TR: TO 31-1-141-4													
*a. Theory of operation	B	-	-	-									
*b. Isolate faulty transistors	2b	-	-	-									
c. Specifications	-	-	-	-									
21. INTEGRATED CIRCUITS TR: TO 31-1-141-4													
*a. Theory of operation	B	-	-	-									
*b. Isolate faulty integrated circuits	2b	-	-	-									
c. Specifications	-	-	-	-									
*22. SOLID STATE SPECIAL PURPOSE DEVICES TR: TO 31-1-141-4													
a. Theory of operation													
(1) SCR	B	-	-	-									
(2) Zener Diode	B	-	-	-									
(3) Tunnel Diode	B	-	-	-									
(4) LED	B	-	-	-									
(5) LCD	B	-	-	-									
(6) UJT	B	-	-	-									
(7) JFET	B	-	-	-									
(8) MOSFET	B	-	-	-									
(9) PIN	B	-	-	-									
(10) VARACTOR	B	-	-	-									
b. Isolate faulty special purpose devices	2b	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
23. ELECTRON TUBES TR: TOs 31-1-141-1, 31-1-141-3, 31-1-141-9													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty electron tubes	-	-	-	-									
c. Specifications	-	-	-	-									
24. CATHODE RAY TUBES TR: TOs 31-1-141-1, 31-1-141-3													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty cathode ray tubes	-	-	-	-									
*25. SOLDER AND DESOLDER TR: TOs 1-1A-14, 00-25-234, 31-1-141-15													
a. Terminal connections	2b	-	-	-									
b. PC Boards	2b	-	-	-									
c. Multipin connectors	2b	-	-	-									
d. Coaxial connectors	2b	-	-	-									
*26. ASSEMBLE SOLDERLESS CONNECTORS TR: TOs 1-1A-14, 31-1-141-15													
a. Crimp connections	2b	-	-	-									
b. Coaxial connectors	2b	-	-	-									
c. Multipin connectors	2b	-	-	-									
27. TEST EQUIPMENT USAGE TR: TOs 31-1-141-1, 31-1-141-7, 31-1-141-8, 31-1-141-9, 31-1-141-10													
*a. Analog multimeter	2b	-	-	-									
*b. Oscilloscope	2b	-	-	-									
c. Signal generator	-	-	-	-									
d. Frequency counter	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
e. Spectrum analyzer	-	-	-	-									
f. Field strength tester	-	-	-	-									
*g. Digital multimeter	2b	-	-	-									
*h. Digital logic probe	2b	-	-	-									
I. Capacitor tester	-	-	-	-									
j. Capacitor substitution box	-	-	-	-									
k. DC restorer	-	-	-	-									
*l. Logic current tracer	2b	-	-	-									
m. Tube tester	-	-	-	-									
*n. Logic pulser	2b	-	-	-									
o. Logic analyzer	-	-	-	-									
*p. Signature analyzer	2b	-	-	-									
q. Reflectometer	-	-	-	-									
*28. TRANSISTOR AMPLIFIER CIRCUITS TR: TOs 31-1-141-1, 31-1-141-4													
a. Theory of operation													
(1) Amplifier circuits	B	-	-	-									
(2) Stabilization circuits	B	-	-	-									
(3) Coupling circuits	B	-	-	-									
b. Troubleshoot circuits	2b	-	-	-									
29. ELECTRON TUBE AMPLIFIERS TR: TO 31-1-141-3													
*a. Theory of operation	B	-	-	-									
b. Troubleshoot circuits	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
30. OPERATIONAL AMPLIFIERS TR: TO 31-1-141-4													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty operational amplifiers	-	-	-	-									
31. MAGNETIC AMPLIFIERS TR: TO 31-1-141-4													
a. Theory of operation	-	-	-	-									
b. Troubleshoot circuits	-	-	-	-									
32. SATURABLE REACTORS TR: TO 31-1-141-4													
a. Theory of operation	-	-	-	-									
b. Troubleshoot saturable reactor circuits	-	-	-	-									
*33. POWER SUPPLY CIRCUITS TR: TOs 31-1-141-3, 31-1-141-4, 31-1-141-9, 31-1-141-15													
a. Theory of operation													
(1) Rectifiers	B	-	-	-									
(2) Filters	B	-	-	-									
b. Troubleshoot circuits	2b	-	-	-									
*34. VOLTAGE REGULATORS TR: TOs 31-1-141-3, 31-1-141-4													
a. Theory of operation	B	-	-	-									
b. Troubleshoot circuits	2b	-	-	-									
*35. RESISTIVE-CAPACITVE-INDUCTIVE (RCL) CIRCUITS TR: TOs 31-1-141-2, 31-1-141-5													
a. Basic operation	B	-	-	-									
b. Resonant operation	B	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
c. Troubleshoot circuits	2b	-	-	-									
d. Calculations	B	-	-	-									
36. FREQUENCY SENSITIVE FILTERS TR: TO 31-1-141-2													
*a. Theory of operation	B	-	-	-									
*b. Troubleshoot circuits	2b	-	-	-									
c. Calculations	-	-	-	-									
*37. WAVE GENERATING CIRCUITS TR: TOs 31-1-141-3, 31-1-141-4, 31-1-141-10													
a. Theory of operation													
(1) Oscillators	B	-	-	-									
(2) Multivibrators	B	-	-	-									
(3) Waveshaping circuits	B	-	-	-									
b. Troubleshoot circuits	2b	-	-	-									
38. LIMITER CIRCUITS TR: TO 31-1-141-4													
*a. Theory of operation													
(1) Diode	B	-	-	-									
(2) Zener diode	B	-	-	-									
(3) Transistor	B	-	-	-									
b. Troubleshoot circuits	-	-	-	-									
39. CLAMPER CIRCUITS TR: TO 31-1-141-4													
*a. Theory of operation	B	-	-	-									
b. Troubleshoot circuits	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
*40. DIGITAL NUMBERING SYSTEMS TR: TO 31-1-141-5													
a. Conversions													
(1) Binary	B	-	-	-									
(2) Octal	B	-	-	-									
(3) Hexadecimal	B	-	-	-									
b. Math operations													
(1) Binary	B	-	-	-									
(2) Octal	B	-	-	-									
(3) Hexadecimal	B	-	-	-									
c. Binary code systems	B	-	-	-									
*41. DIGITAL LOGIC FUNCTIONS TR: TOs 31-1-141-4, 31-1-141-5													
a. Theory of operation													
(1) Main logic gates	B	-	-	-									
(2) Flip-Flops	B	-	-	-									
b. Troubleshoot circuits	2b	-	-	-									
c. Logic families													
(1) TTL	B	-	-	-									
(2) CMOS	B	-	-	-									
42. BOOLEAN EQUATIONS TR: TO 31-1-141-5													
a. Diagram to equation	-	-	-	-									
b. Equation to diagram	-	-	-	-									
c. Simplify expressions	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2.- FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
43. COMPUTERS TR: TOs 31-1-141-6C, 31-1-141-9													
*a. Operation principles	B	-	-	-									
b. Load programs	-	-	-	-									
c. Write and debug programs	-	-	-	-									
d. Isolate faulty major computer units	-	-	-	-									
*e. Troubleshoot computer subassemblies or circuits	2b	-	-	-									
*f. Type of memories	B	-	-	-									
*g. Peripheral devices	B	-	-	-									
h. Programming languages	-	-	-	-									
*44. MICROPROCESSOR CONTROLLED SYSTEMS TR: TO 31-1-141-6C													
a. Theory of operation	B	-	-	-									
(1) Universal	B	-	-	-									
(2) 8085 Specific	2b	-	-	-									
b. Isolate faulty microprocessors													
*45. LOGIC CIRCUITS TR: TOs 31-1-141-5, 31-1-141-13													
a. Theory of operation	B	-	-	-									
(1) Counters	B	-	-	-									
(2) Registers	B	-	-	-									
(3) Combinational logic circuits	2b	-	-	-									
b. Troubleshoot circuits													
46. DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS TR: TO 31-1-141-13													
*a. Theory of operation													

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
(1) Weighted Resistor digital to analog	B	-	-	-									
(2) Approximation analog to digital	B	-	-	-									
(3) Ramp analog to digital	B	-	-	-									
b. Isolate faulty converters	-	-	-	-									
47. TRANSMISSION LINES TR: TOs 31-1-141-7, 31-1-141-8, 31-1-141-9, 31-1-141-13													
*a. Theory of operation	B	-	-	-									
b. Perform measurement	-	-	-	-									
c. Calculations	-	-	-	-									
d. Isolate faulty transmission lines	-	-	-	-									
48. WAVEGUIDES TR: TOs 31-1-141-9, 31-1-141-11													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty waveguides	-	-	-	-									
49. MICROWAVE OSCILLATORS & AMPLIFIERS TR: TOs 31-1-141-3, 31-1-141-10, 31-1-141-11													
*a. Theory of operation	B	-	-	-									
b. Tune or adjust	-	-	-	-									
c. Isolate faulty microwave oscillators or amplifiers	-	-	-	-									
50. RESONANT CAVITIES TR: TOs 31-1-141-3, 31-1-141-9, 31-1-141-11													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty resonant cavities	-	-	-	-									
c. Tune and adjust	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
51. TRANSMITTERS TR: TOs 31-1-141-4, 31-1-141-9, 31-1-141-13													
*a. Theory of operation													
(1) Amplitude modulation	B	-	-	-									
(2) Frequency modulation	B	-	-	-									
(3) Single side band	B	-	-	-									
(4) Pulse modulation	B	-	-	-									
b. Troubleshoot circuits	-	-	-	-									
52. RECEIVERS TR: TOs 31-1-141-4, 31-1-141-9, 31-1-141-13													
*a. Theory of operation													
(1) Amplitude modulation	B	-	-	-									
(2) Frequency modulation	B	-	-	-									
(3) Single side band	B	-	-	-									
(4) Pulse modulation	B	-	-	-									
b. Troubleshoot circuits	-	-	-	-									
53. TRANSMISSION POWER TR: TOs 31-1-141-7, 31-1-141-8, 31-1-141-11													
a. Perform measurements	-	-	-	-									
b. Calculations	-	-	-	-									
54. ANTENNAS TR: TO 31-1-141-12													
*a. Theory of operation	B	-	-	-									
b. perform alignment	-	-	-	-									
c. Isolate faulty antennas	-	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING						3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5	b. CDC 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5	d. EXPORT-ABLE COURSE 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT
55. MICROPHONES TR: TO 31-1-141-3													
a. Theory of operation	-	-	-	-									
b. Troubleshoot circuits	-	-	-	-									
56. SPEAKERS TR: TO 31-1-141-3													
a. Theory of operation	-	-	-	-									
b. Troubleshoot circuits	-	-	-	-									
57. PHOTOSENSITIVE DEVICES TR: TOs 31-1-141-3, 31-1-141-4													
*a. Theory of operation	B	-	-	-									
b. Isolate faulty photosensitive devices	-	-	-	-									
58. DISPLAY TUBES TR: TO 31-1-141-3													
a. Theory of operation	-	-	-	-									
b. Isolate faulty display tubes	-	-	-	-									
*59. SUPPORT SUBJECTS TR: TO 31-1-141-1													
a. Safety applicable to electronics	B	-	-	-									
b. First aid for electrical shock	B	-	-	-									
c. Electrostatic Discharge (ESD) control	B	-	-	-									
d. Electromagnetic effect on electronic equipment	B	-	-	-									

1. TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	2. FORMAL TRAINING				3. CORE TASK		4. OJT/CERTIFICATION				
	a. 3 LVL	b. CDC 5 7	c. 7 LVL	d. EXPORT-ABLE COURSE 5 7	a. 5	b. 7	a. START	b. COMP	c. TRAINEE	d. TRAINER	e. CERT

STS SUMMARY OF CHANGES

This STS attachment 2 revision reflects the conversion to the Keesler AFB Electronics Training Program (ETP) and changes made by the December 1993 Utilizating and Training Workshop (U&TW).

1. Three level formal training requirements for items 10a, 11a, 13a, 15a, 17a, 42a, and 42b was deleted.

2. The procedure to "Isolate faulty ---" was deleted from items 10 through 15, 28, 29, 31 through 34, 36 through 39, 41, 45, 51, 52, 55, and 56.

3. Items 22a(9), 22a(10), and 59d were added and coded to a "B" level for three level formal training.

4. Three level formal training to a 2b level was added to item 43e.

5. Item 44a was subdivided to (1) Universal and (2) 8085 specific.

SECTION B - COURSE OBJECTIVE LIST

1. Measurement. Each objective is indicated as follows: **W** indicates task or subject knowledge which is measured using a written test, **PC** indicates required task performance which is measured with a performance progress check, and **PC/W** indicates separate measurement of both knowledge and performance elements using a written test and a performance progress check.

2. Standard. The standard is 70% on written examinations. Standards for performance measurement are indicated in the objective and delineated on the individual progress checklist. Instructor assistance is provided as needed during the progress check, and students may be required to repeat all or part of the behavior until satisfactory performance is attained.

3. Most task performance is taught to the "2b" proficiency level which means the students can do most parts of the task, but does need assistance on the hardest parts of the task (partially proficient). The student can also determine step by step procedures for doing the task.

4. Course Objective List. These objectives are listed in the sequence taught by Block of Instruction.

4.1. Initial Skills Course. - E3AQR2P031 000; Precision Measurement Equipment Laboratory Apprentice

4.1.1. Block 2.1. - Introduction To Metrology

2a. Given definitions, identify the proper practices and procedures, and measurement terms that apply to each definition. A minimum accuracy of 70 percent is required. STS: 10a Meas: PC/W

2b. Given TMDE technical data, and a list of TMDE problems, use the technical data to determine maintenance procedures. A minimum accuracy of 70 percent is required. STS: 5a(2), 5a(3) Meas: PC/W

2c. Given reference material, locate part numbers, stock numbers, and management information necessary for ordering replacement parts with no more than two (2) instructor assists. STS: 5a(4) Meas: PC/W

2d. Identify benchstock, its purpose and usefulness with at least 70 percent accuracy. STS: 10f Meas: PC/W

2e. Identify cables and connectors with at least 70 percent accuracy. STS: 10d Meas: PC/W

2f. Given T.O. 32-1-101 (extract), and a list of hand tools, select the proper use and care procedure to be used with each hand tool. A minimum accuracy of 70 percent is required. STS: 10e Meas: PC/W

2g. Identify Surface Mount Technology with at least 70 percent accuracy. STS: 10c Meas: PC/W

2h. Given a list of Operational Security (OPSEC) vulnerable areas, select those items that are specific to AFSC 2P031 with at least 70 percent accuracy. STS: 2a Meas: PC/W

3a. Given a list of potential safety hazards, select the safety hazards associated with AFSC 2P031. A minimum accuracy of 70 percent is required. STS: 3a Meas: PC/W

3b. Given TMDE and necessary technical data; measure high voltage using proper safety practices with no more than two (2) instructor assists. STS: 3b Meas: PC/W

3c. Identify the types of hazardous material and procedures for handling, storage, labeling and disposal of hazardous material with minimum accuracy of 70 percent. STS: 4a, 4b, 4c, 4d Meas: PC/W

4a. Given TMDE uncertainties, determine suitable substitutes for standards with at least 70 percent accuracy. STS: 10h Meas: PC/W

4b. Given a list of calculations pertaining to metrology, solve the problems with a minimum of 70% accuracy. STS: 11a (2), 11a (4) Meas: PC/W

4c. Given the characteristics of gross, systematic, and random errors, identify each type of error with at least 70 Percent accuracy. STS: 11a (3) Meas: PC/W

4d. Given example calibration and correction charts, use charts to determine actual values with at least 70 percent accuracy. STS: 5b (1) Meas: PC/W

4e. Given formulas, perform mathematical computations to convert power ratios in dB to power levels in watts and vice versa with a minimum of 70% accuracy. STS: 11a(1) Meas: PC/W

4.1.2. Block 2.2. - TMDE Circuit Analysis

1a. Given schematic diagrams, identify operating principles of analog discrete circuits with at least 70% accuracy. STS: 11b(1) Meas: PC/W

1b. Given schematic diagrams, identify operating principles of analog integrated circuits with at least 70% accuracy. STS: 11b(2) Meas: PC/W

1c. Given schematic diagrams, identify operating principles of digital circuits with at least 70% accuracy. STS: 11b(3) Meas: PC/W

2a. Given schematic diagrams and applicable data, theoretically troubleshoot Test Measurement and Diagnostic Equipment (TMDE) to a faulty component with a minimum of 70% accuracy. STS: 11b(1), 11b(2), 11b(3), 11b(6) Meas: PC/W

4.1.3. Block 2.3. - AC/DC Measurements

1a. Given TMDE and applicable technical data use an instrument calibrator to produce specified outputs with no more than two (2) instructor assists. STS: 12h(1), 12I(1) Meas: PC

1b. Given TMDE and applicable technical data calibrate an analog multimeter with no more than two (2) instructor assists. STS: 12i(4) Meas: PC

1c. Given TMDE and applicable technical data align an analog multimeter with no more than two (2) instructor assists. STS: 12i(2) Meas: PC

2a. Given TMDE and applicable technical data use a voltage divider to produce specified outputs with no more than two (2) instructor assists. STS: 12c(1), 12d(1), 12k(1) Meas: PC

2b. Given TMDE and applicable technical data calibrate a digital multimeter with no more than two (2) instructor assists. STS: 12k(4) Meas: PC

2c. Given TMDE and applicable technical data align a digital multimeter with no more than two (2) instructor assists. STS: 12k(2) Meas: PC

3a. Given TMDE and applicable technical data use a differential voltmeter to measure

specified voltages with no more than three (3) instructor assists.
STS: 12e(1), 12f(1), 12r(1) Meas: PC

3b. Given TMDE and applicable technical data calibrate a differential voltmeter with no more than two (2) instructor assists. STS: 12r(4) Meas: PC

3c. Given TMDE and applicable technical data align a differential voltmeter with no more than two (2) instructor assists. STS: 12r(2) Meas: PC

4a. Given TMDE and applicable technical data use a power supply to produce specified voltages with no more than three (3) instructor assists. STS: 12g(1) Meas: PC

4b. Given TMDE and applicable technical data calibrate a power supply with no more than two (2) instructor assists. STS: 12g(4) Meas: PC

4c. Given TMDE and applicable technical data align a power supply with no more two (2) instructor assists. STS: 12g(2) Meas: PC

5a. Given TMDE and applicable technical data, troubleshoot multimeters to a faulty component with no more than two (2) instructor assists. STS: 12i(3), 12k(3) Meas: PC

5b. Given TMDE and applicable technical data, troubleshoot a power supply to a faulty component with no more than two (2) instructor assists. STS: 12g(3) Meas: PC

5c. Given TMDE and applicable technical data, troubleshoot a differential voltmeter to a faulty component with no more than two (2) instructor assists. STS: 12r(3) Meas: PC

4.1.4. Block 2.4. - Advanced Measurements Techniques

1a. Given TMDE and applicable technical data, use a feedthrough load to obtain specific outputs. STS: 13j(1) Meas: PC/W

1b. Given TMDE and applicable technical data use an AC voltmeter with no more than two (2) instructor assists. STS: 12v(1) Meas: PC/W

1c. Given TMDE and applicable technical data use a signal generator/test oscillator to produce specified outputs with no more than one (1) instructor assist.
STS: 12v(1), 13h(1), 13j(1) Meas: PC/W

1d. Given TMDE and applicable technical data calibrate an AC voltmeter with no more than two (2) instructor assists. STS: 12v(4) Meas: PC/W

1e. Given TMDE and applicable technical data align an AC voltmeter with no more than two (2) instructor assists. STS: 12v(2) Meas: PC/W

2a. Given TMDE and applicable technical data calibrate a signal generator/test oscillator with no more than two (2) instructor assists. STS: 13h(4) Meas: PC/W

2b. Given TMDE and applicable technical data use a distortion analyzer with no more than two (2) instructor assists. STS: 13k(1) Meas: PC/W

2c. Given TMDE and applicable technical data align a signal generator/test oscillator with no more than two (2) instructor assists. STS: 13h(2) Meas: PC/W

2d. Given TMDE and applicable technical data, troubleshoot a signal generator/test oscillator with no more than two (2) instructor assists. STS: 13h(3) Meas: PC/W

3a. Given TMDE and applicable technical data calibrate a distortion analyzer with no more than two (2) instructor assists. STS: 13k(4) Meas: PC/W

3b. Given TMDE and applicable technical data align a distortion analyzer with no more than two (2) instructor assists. STS: 13k(2) Meas: PC/W

3c. Given TMDE and applicable technical data, troubleshoot a distortion analyzer with no more than two (2) instructor assists. STS: 13k(3) Meas: PC/W

4a. Given TMDE and applicable technical data calibrate a resistance standard with no more than three (3) instructor assists. STS: 12a(1), 12a(4) Meas: PC/W

4.1.5. Block 2.5 - Oscilloscope Calibration Systems

1a. Given TMDE and technical data, use time mark generator to generate specified outputs with no more than one (1) instructor assist. STS: 13e(1) Meas: PC/W

1b. Given technical data, theoretically troubleshoot time mark generator to a faulty component with a minimum accuracy of 70 percent. STS: 13e(3) Meas: PC/W

2a. Given TMDE and technical data, use constant amplitude generator to generate

specified outputs with no more than one (1) instructor assist. STS: 13f(1) Meas: PC/W

2b. Given technical data, theoretically troubleshoot constant amplitude generator to a faulty component with a minimum accuracy of 70 percent. STS: 13f(3) Meas: PC/W

3a. Given TMDE and technical data, use pulse generator to generate specified outputs with no more than one (1) instructor assist. STS: 13d(1) Meas: PC/W

3b. Given technical data, theoretically troubleshoot pulse generator to a faulty component with a minimum accuracy of 70 percent. STS: 13d(3) Meas: PC/W

4a. Given a time mark generator, TMDE and technical data, perform selected calibrations with no more than two (2) instructor assists. STS: 13e(4) Meas: PC/W

4b. Given a constant amplitude generator, TMDE and technical data, perform selected calibrations with no more than two (2) instructor assists. STS: 13f(4) Meas: PC/W

4c. Given a pulse generator, TMDE and technical data, perform selected calibrations with no more than two (2) instructor assists. STS: 13d(4) Meas: PC/W

4.1.6. Block 2.6 - Oscilloscope and Waveform Analysis

1a. Given TMDE and technical data, use an oscilloscope to measure specified outputs with no more than two (2) instructor assists. STS: 13t(1) Meas: PC/W

1b. Given technical data, theoretically troubleshoot oscilloscope to a faulty stage with a minimum accuracy of 70 percent. STS: 13t(3) Meas: PC/W

1c. Given TMDE and technical data, troubleshoot the oscilloscope to a faulty stage with no more than two (2) instructor assists. STS: 13t(3) Meas: PC/W

1d. Given TMDE and technical data, calibrate the oscilloscope with no more than one (1) nstructor assist. STS: 13t(4) Meas: PC/W

1e. Given TMDE and technical data, perform selected alignments of an oscilloscope with no more than three (3) instructor assists. STS: 13t(2) Meas: PC/W

4.1.7. Block 2.7 - Precise Frequency Measurement

1a. Given TMDE, and necessary technical data, use the frequency synthesizer to generate specified outputs as measured with an oscilloscope with no more than two (2) instructor assists. STS: 13i(1) Meas: PC/W

1b. With applicable technical data, use the power meter, power sensor, thermistor mount, fixed attenuator, and frequency synthesizer to measure specified power outputs of the RF signal generator with the power meter with no more than two (2) instructor assists. STS: 11a(1), 14a(1), 14c(1), 14d(1), 14e(1) Meas: PC/W

2a. Given TMDE and applicable technical data, measure the frequency offset of a frequency standard internal oscillator with no more than two (2) instructor assists. STS: 13n(1) Meas: PC/W

2b. Given TMDE and applicable technical data, use the frequency counter to perform measurements in all functions and ranges with no more than two (2) instructor assists. STS: 13r(1) Meas: PC/W

2c. Given TMDE and applicable technical data, calibrate the frequency counter with no more than one (1) instructor assist. STS: 12j(4) Meas: PC/W

2d. Given TMDE and applicable technical data, align the frequency counter with no more than two (2) instructor assists. STS: 13r(2) Meas: PC/W

2e. Given TMDE and applicable technical data, troubleshoot the frequency counter to the faulty component with no more than two (2) instructor assists. STS: 13r(3) Meas: PC/W

4.1.8. Block 2.8 - Signal Generation Measurements

1a. Given TMDE and applicable technical data, use a function generator to generate specified outputs with no more than one (1) instructor assist. STS: 13c(1) Meas: PC/W

1b. Given TMDE and applicable technical data, calibrate the function generator with no more than two (2) instructor assists. STS: 13c(4) Meas: PC/W

1c. Given TMDE and applicable technical data, troubleshoot the function generator to a

faulty component with no more than two (2) instructor assists. STS: 13c(3) Meas: PC/W

1d. Given TMDE and applicable technical data, align the function generator with no more than two (2) instructor assists. STS: 13c(2) Meas: PC/W

2a. Given spectrum analysis principles, select the proper response that applies to each principle with a minimum of 70 percent accuracy. STS: 11b(4) Meas: PC/W

2b. Given a spectrum analyzer, necessary test equipment and appropriate technical data, use the spectrum analyzer to measure specified signals with no more than three (3) instructor assists. STS: 13m(1) Meas: PC/W

3a. Given TMDE and appropriate technical data, use the signal generator to generate specified outputs as measured with an oscilloscope with no more than one (1) instructor assist. STS: 13h(1) Meas: PC/W

3b. Given TMDE, use the detector to demodulate the amplitude modulated signal output of the signal generator as displayed on the oscilloscope with no more than one (1) instructor assist. STS: 14h(1) Meas: PC/W

3c. Given TMDE and appropriate technical data, calibrate the signal generator with no more than three (3) instructor assists. STS: 13h(4), 13l(1), 14g(1) Meas: PC/W

3d. Given TMDE and appropriate technical data align the signal generator with no more than two (2) instructor assists. STS: 13h(2) Meas: PC/W

3e. Given a list of frequency synthesizing principles, select the proper response that applies to each principle. A minimum accuracy of 70 percent is required. STS: 11b(5) Meas: PC/W

3f. Given TMDE and appropriate technical data, troubleshoot the signal generator to the faulty stage with no more than two (2) instructor assists . STS: 13h(3) Meas: PC/W

4.1.9. Block 2.9 - Physical/Dimensional Measurement

1a. Given reference materials, identify selected principles of temperature to at least 70% accuracy. STS: 11e Meas: W

1b. Given reference materials, identify selected principles of humidity to at least 70%

accuracy. STS: 11f Meas: W

1c. Given reference materials, identify selected principles of pressure to at least 70% accuracy. STS: 11g Meas: W

1d. Given reference materials, identify selected principles of vacuum to at least 70% accuracy. STS 11h Meas: W

1e. Given reference materials, identify selected principles of torque to at least 70% accuracy. STS: 11k Meas: W

1f. Given reference materials, identify selected principles of linear measurements to at least 70% accuracy. STS: 11l Meas: W

1g Given reference materials, identify selected principles of mass and weight to at least 70% accuracy. STS: 11n Meas: W

2a. Given a set of gage blocks and appropriate technical data, show the proper techniques for using linear standards with no more than one (1) instructor assist. STS: 15a(1) Meas: PC/W

2b. Given TMDE and technical data use a micrometer to measure an unknown length with no more than one (1) instructor assist. STS: 15b(4) Meas: PC/W

2c. Given TMDE and technical data calibrate a micrometer with no more than two (2) instructor assists. STS: 15b(1) Meas: PC/W

3a. Identify the procedures for using temperature standards with a minimum of 70% accuracy. STS: 15e(1) Meas: W

3b. Identify procedures for using temperature measuring TMDE with a minimum of 70% accuracy. STS: 15f(1) Meas: W

3c. Identify procedures for the calibration of temperature measuring TMDE with a minimum of 70% accuracy. STS: 15f.4) Meas: W

4a. Given TMDE and technical data, use a hydraulic pressure gage deadweight tester to produce specified outputs on three different types of pressure gages with no more than one (1) instructor assist. STS: 15j(1) Meas: PC/W

5a. Given a scale and standard weight set and necessary technical data, use the standard

weight set to calibrate the scale with no more than two (2) instructor assists. STS: 15m(1), 15n(1), 15n(4) Meas: PC/W

6a. Given a torque tester/mechanical loader , torque wrenches, and necessary T.O.'s, use the torque tester/mechanical loader to calibrate 3 different types of torque wrenches with no more than two (2) instructor assists. STS: 15q(1), 15r(1), 15r(4) Meas: PC/W

4.2. Initial Skills Course. - E3ABR2P031 009; Precision Measurement Equipment Laboratory Apprentice

4.2.1. Block 3.1 - Standard PMEL Operations

1a. Using appropriate references, identify the duties of AFSC 2P0X1 to at least 70% accuracy. STS: 1b Meas: W

1b. Given reference material, identify terms and definitions pertaining to the Metrology and Calibration Program as listed in T.O. 00-20-14 with at least 70% accuracy. STS: 10a Meas: W

1c. Given reference material, identify facts and principles of Metrology laboratory operations as described in T.O. 00-20-14 with at least 70% accuracy. STS: 10a Meas: W

1d. Given reference material, identify basic facts and principles related to Metrology laboratory facility operational requirements as described in T.O. 00-20-14 with at least 70% accuracy. STS: 10a: Meas: W

1e. Given reference material, identify basic facts and principles of the Metrology Quality Assurance Program as described in T.O. 00-20-14 with at least 70% accuracy. STS: 10a Meas: W

2a. Given equipment part numbers and reference data, select the proper publication for maintenance and/or calibration of specific pieces of equipment with no more than three (3) instructor assists. STS: 5a(2), 5a(3) Meas: PC

2b. Using appropriate references, identify the procedures to initiate a T.O. improvement report to at least 70% accuracy. STS: 5a(5) Meas: PC/W

2c. Given calibration scenarios and appropriate references, complete applicable TMDE documentation with no more than two (2) instructor assists. STS: 5b(2) Meas: PC

3a. Using appropriate references, identify basic facts and principles of the Maintenance Data Collection System to at least 70% accuracy. STS: 8b(1) Meas: W

3b. Given a maintenance situation, use PAMS to process maintenance actions with no more than three (3) instructor assists. STS: 8b(2)(a) Meas: PC

4a. Acquaint trainee with: (1) How Quality Air Force (QAF) practices have made a difference in their career field area; and (2) one of the techniques used to analyze problems and identify solutions in a QAF environment. STS: None Meas: None
(1) Case Studies
(2) Brainstorming

7a. Calibrate an analog passive multimeter utilizing appropriate test equipment and calibration procedures. STS: 5b(2), 8b(2)(a), 12i(1), 12I(4) Meas: PC

8a. Calibrate a digital multimeter utilizing appropriate test equipment and calibration procedures. STS: 5b(2), 8b(2)(a), 12k(1), 12k(4) Meas: PC

9a. Calibrate a frequency counter utilizing appropriate test equipment and calibration procedures. STS: 5b(2), 8b(2)(a), 13r(1), 13r(4) Meas: PC

10a. Calibrate an oscilloscope utilizing appropriate test equipment and applicable calibration procedure. STS: 5b(2), 8b(2)(a), 13t(1), 13t(4) Meas: PC

11a. Calibrate various pressure gages utilizing appropriate test equipment and calibration procedures. STS: 5b(2), 8b(2)(a), 15l(1), 15l(4) Meas: PC

12a. Calibrate various torque wrenches utilizing appropriate test equipment and calibration procedures. STS: 5b(2), 8b(2)(a), 15r(4) Meas: PC

4.3. Advanced Skills Course. - E3ACR2P071 000; Precision Measurement Equipment Laboratory Craftsman

4.2.1. Block I. - Metrology Management Principles

2a. Identify principles of Quality Air Force. STS: None Meas: None

2b. Analyze the PMEL total quality program. STS: 8o Meas: W

3a. Identify facts about resource management process. STS: 8m Meas: W

3b. Identify the manpower management process. STS: 6i Meas: W

3c. Identify terms and forms associated with supply transactions. STS: 8g Meas: W

3d. Identify management procedures of supply accounts. STS: 9b, 10g Meas: W

3e. Identify tasks involved in managing an equipment account and complete necessary forms. STS: 8i Meas: W

3f. Analyze DLR management. STS: 8p Meas: W

3g. Analyze types of support agreements. STS: 8l Meas: W

4a. Analyze the environmental requirements for PMEL facilities. STS: 8h Meas: W

4b. Identify facility requirements of a PMEL. STS: 8r Meas: W

5a. Analyze safety hazards associated with PMEL. STS: 3a Meas: W

5b. Identify records and reports used in conjunction with the PMEL safety program. STS: 3a Meas: W

6a. Analyze facts associated with hazardous materials used in PMEL. STS: 4a Meas: W

6b. Identify the proper procedures for handling, storing and disposing of hazardous materials. STS: 4b, 4c, 4d Meas: W

6c. Analyze the purpose of the Hazard Communication Program. STS: 3a Meas: W

7a. Analyze production management. STS: 8c, 8f Meas: W

8a. Analyze the NRC requirements for a RADIAC permit. STS: 8k, 8r Meas: W

8b. Identify proper procedures for shipping, receiving, and storing radioactive standards.

STS: 4b, 4c Meas: W

9a. Analyze the PMEL training program. STS: 7a, 7b(1), 7b(2), 7b(3) Meas: W

9b. Analyze the RCS: HAF-LG (SA) 7808 report. STS: 6g, 6h(1) Meas: W

9c. Identify the process for maintaining a laboratory publications library.
STS: 5a(1) 5a(6) Meas: W

9d. Analyze the supervision of PMEL personnel.
STS: 6d(1), 6d(2), 6d(3), 6e(1), 6e(2) Meas: W

10a. Analyze the PMEL certification program. STS: 8j, 9a Meas: W

10b. Analyze principles of theoretical troubleshooting. STS: 11b(6) Meas: W

10c. Analyze the AFMETCAL Program. STS: 10a Meas: W

SECTION C - SUPPORT MATERIALS

NOTE: There are currently no support material requirements. This area is reserved.

SECTION D - TRAINING COURSE INDEX

1. Purpose. This section of the CFETP identifies training courses available for the specialty for broadening and expanding career field knowledge. Refer to AFCAT 36-2223, USAF Formal Schools Catalog, for information on all courses listed in this index.

2. Air Force In-Residence Courses.

COURSE NUMBER	TITLE	LOCATION	USER
E3AQR2E020 010	Common Electronic Training Program (CETP)	Keesler AFB	AF
E3AQR2P031 000	Precision Measurement Equipment Laboratory (PMEL) Apprentice	Keesler AFB	AF
E3ABR2P031 009	PMEL Apprentice	Keesler AFB	AF
E3AAR2P071 000	PMEL Craftsman	Keesler AFB	AF

3. Supplemental Courses

COURSE NUMBER	TITLE	LOCATION	USER
E3AZR2P051 000	RADIAC Instrument Repair and Calibration	Keesler AFB	AF
E3AZR2P051 008	Physical Measurement and Calibration	Keesler AFB	AF
E3AZR2P051 032	Type A/E 35U-3 Spectrometer Maintenance and Calibration	Keesler AFB	AF
E3AZR2P051 041	Advanced Calibration, Measurement, and Diagnostics	Keesler AFB	AF
E3AZR2P051 045	TACAN/DOD AIMS Diagnostic Principles	Keesler AFB	AF

E3AZR30000 001	High Reliability Soldering and Connections	Keesler AFB	AF

4. General FTD Courses

The following general FTD courses apply to subject AFSCs and other AFSCs as well.

COURSE NUMBER	TITLE	LOCATION	USER
J4AMF/ASF/AST30000-022	Basic Soldering Techniques	982TRG	AF
J6AZU/2E066-059	Air Force Maintenance Data Collection System (CAMS) (81 AUTO FORMS)	982TRG	AF

5. Extension Course Institute (ECI) Courses

COURSE NUMBER	TITLE	LOCATION	USER

None

6. Exportable Courses

COURSE NUMBER	TITLE	LOCATION	USER
J4AMF/ASF/AST00066-039	Air Force T.O. System Adv	CBT	AF
J4AMF/ASF/AST00066-057	Organizational Maintenance Manual Set (OMMS)	CBT	AF
J4AMF/ASF/AST00066-058	Air Force Maintenance Data Collection System (CAMS)	CBT	AF
J4AMF/ASF/AST00066-062	Air Force Maintenance Data Collection System (CAMS) Mid-Level Maintenance Manager's Course	CBT	AF

7. Courses Under Development/Revision

COURSE NUMBER	TITLE	LOCATION	USER
E3AQR2P031 000	Precision Measurement Equipment Laboratory (PMEL) Apprentice	Keesler AFB	AF
E3ABR2P031 009	Precision Measurement Equipment Laboratory (PMEL) Apprentice	Keesler AFB	AF
E3AZR2P071 000	RADIAC Instrument Repair and Calibration	Keesler AFB	AF
E3AZR2P071 032	Type A/E 35U-3 Spectrometer Maintenance and Calibration	Keesler AFB	AF

SECTION E - MAJCOM UNIQUE REQUIREMENT

NOTE: There are currently no MAJCOM unique requirements. This area is reserved.